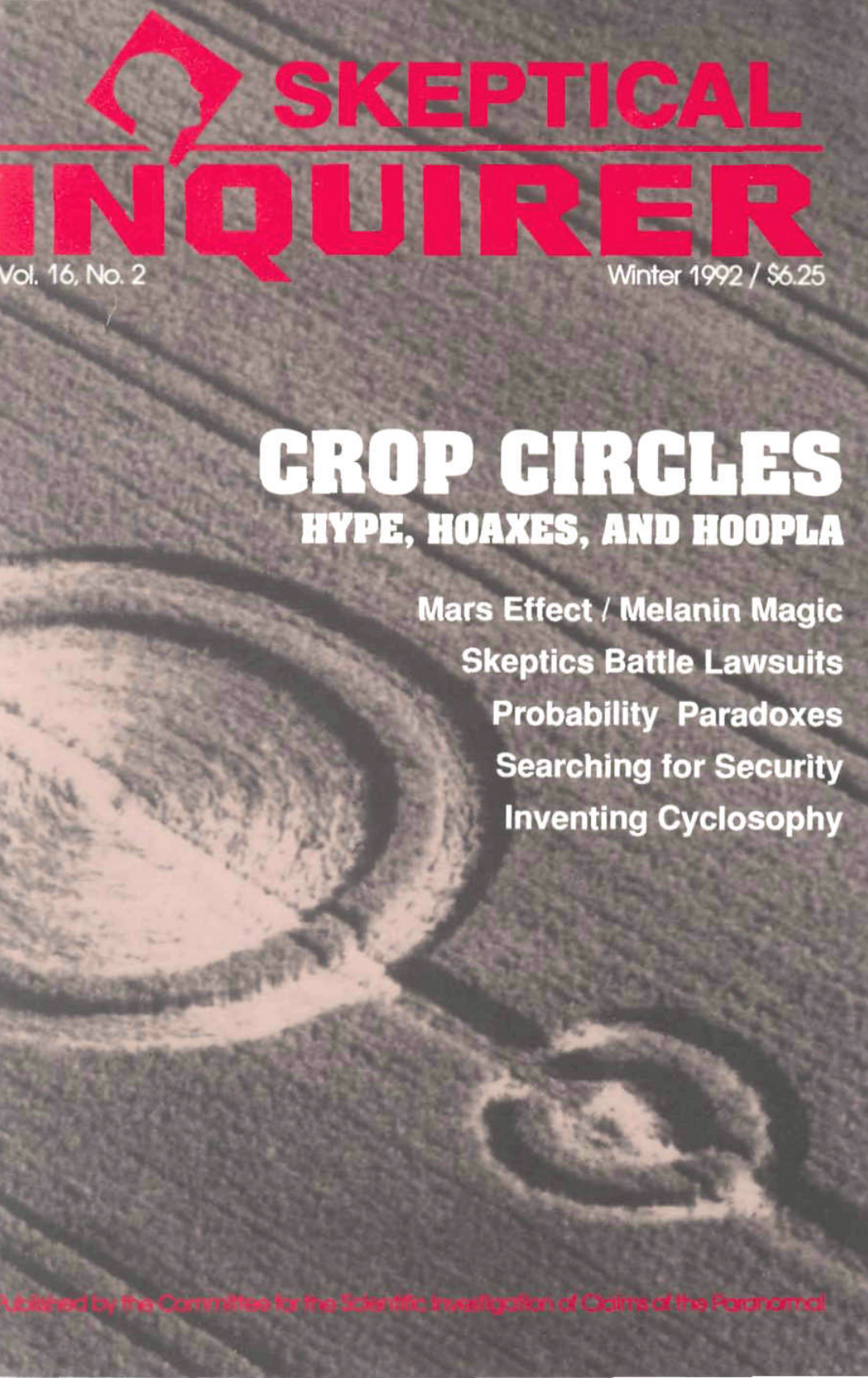


SKEPTICAL INQUIRER

Vol. 16, No. 2 Winter 1992 / $6.25

CROP CIRCLES
HYPE, HOAXES, AND HOOPLA

Mars Effect / Melanin Magic
Skeptics Battle Lawsuits
Probability Paradoxes
Searching for Security
Inventing Cyclosophy

Published by the Committee for the Scientific Investigation of Claims of the Paranormal

THE SKEPTICAL INQUIRER is the official journal of the Committee for the Scientific Investigation of Claims of the Paranormal, an international organization.

Editor Kendrick Frazier.
Editorial Board James E. Alcock, Martin Gardner, Ray Hyman, Philip J. Klass, Paul Kurtz.
Consulting Editors Isaac Asimov, William Sims Bainbridge, John R. Cole, Kenneth L. Feder, C. E. M. Hansel, E. C. Krupp, David F. Marks, Andrew Neher, James E. Oberg, Robert Sheaffer, Steven N. Shore.
Managing Editor Doris Hawley Doyle. **Contributing Editor** Lys Ann Shore.
Business Manager Mary Rose Hays.
Art Jacqueline Cooke.
Chief Data Officer Richard Seymour. **Computer Assistant** Michael Cione.
Typesetting Paul E. Loynes. **Audio Technician** Vance Vigrass. **Librarian,** Ranjit Sandhu.
Staff Leland Harrington, Sandra Lesniak, Alfreda Pidgeon, Kathy Reeves, Elizabeth Begley (Albuquerque). **Cartoonist** Rob Pudim.

The Committee for the Scientific Investigation of Claims of the Paranormal

Paul Kurtz, Chairman; professor emeritus of philosophy, State University of New York at Buffalo.
Barry Karr, Executive Director and Public Relations Director.
Lee Nisbet, Special Projects Director.

Fellows of the Committee (partial list)

James E. Alcock, psychologist, York Univ., Toronto; **Isaac Asimov,** biochemist, author; **Robert A. Baker,** psychologist, Univ. of Kentucky; **Irving Biederman,** psychologist, University of Minnesota; **Susan Blackmore,** psychologist, Brain Perception Laboratory, University of Bristol, England; **Henri Broch,** physicist, University of Nice, France; **Mario Bunge,** philosopher, McGill University; **John R. Cole,** anthropologist, Institute for the Study of Human Issues; **F. H. C. Crick,** biophysicist, Salk Institute for Biological Studies, La Jolla, Calif.; **L. Sprague de Camp,** author, engineer; **Cornelis de Jager,** professor of astrophysics, Univ. of Utrecht, the Netherlands; **Bernard Dixon,** science writer, London, U.K.: **Paul Edwards,** philosopher, Editor, *Encyclopedia of Philosophy;* **Antony Flew,** philosopher, Reading Univ., U.K.; **Andrew Fraknoi,** astronomer, executive officer, Astronomical Society of the Pacific; editor of *Mercury;* **Kendrick Frazier,** science writer, Editor, THE SKEPTICAL INQUIRER; **Yves Galifret,** Exec. Secretary, l'Union Rationaliste; **Martin Gardner,** author, critic; **Murray Gell-Mann,** professor of physics, California Institute of Technology; **Henry Gordon,** magician, columnist, broadcaster, Toronto; **Stephen Jay Gould,** Museum of Comparative Zoology, Harvard Univ.; **C. E. M. Hansel,** psychologist, Univ. of Wales; **Al Hibbs,** scientist, Jet Propulsion Laboratory; **Douglas Hofstadter,** professor of human understanding and cognitive science, Indiana University; **Ray Hyman,** psychologist, Univ. of Oregon; **Leon Jaroff,** sciences editor, *Time;* **Lawrence Jerome,** science writer, engineer; **Philip J. Klass,** science writer, engineer; **Marvin Kohl,** professor of philosophy, SUNY at Fredonia; **Edwin C. Krupp,** astronomer, director, Griffith Observatory; **Paul Kurtz,** chairman, CSICOP, Buffalo, N.Y.; **Lawrence Kusche,** science writer; **Paul MacCready,** scientist/engineer, AeroVironment, Inc., Monrovia, Calif.; **David Marks,** psychologist, Middlesex Polytech, England; **David Morrison,** space scientist, NASA Ames Research Center; **Richard A. Muller,** professor of physics, Univ. of Calif., Berkeley; **H. Narasimhaiah,** physicist, president, Bangalore Science Forum, India; **Dorothy Nelkin,** sociologist, Cornell University. **Joe Nickell,** author, technical writing instructor, University of Kentucky; **Lee Nisbet,** philosopher, Medaille College; **James E. Oberg,** science writer; **John Paulos,** mathematician, Temple University; **Mark Plummer,** lawyer, Australia; **W. V. Quine,** philosopher, Harvard Univ.; **Milton Rosenberg,** psychologist, University of Chicago; **Carl Sagan,** astronomer, Cornell Univ.; **Evry Schatzman,** President, French Physics Association; **Eugenie Scott,** physical anthropologist, executive director, National Center for Science Education, Inc.; **Thomas A. Sebeok,** anthropologist, linguist, Indiana University; **Robert Sheaffer,** science writer; **Dick Smith,** film producer, publisher, Terrey Hills, N.S.W., Australia; **Robert Steiner,** magician, author, El Cerrito, California; **Carol Tavris,** psychologist, UCLA; **Stephen Toulmin,** professor of philosophy, Northwestern Univ.; **Marvin Zelen,** statistician, Harvard Univ. (Affiliations given for identification only.)

Manuscripts, letters, books for review, and editorial inquiries should be addressed to Kendrick Frazier, Editor, THE SKEPTICAL INQUIRER, 3025 Palo Alto Dr., N.E., Albuquerque, NM 87111.

Subscriptions, change of address, and advertising should be addressed to: THE SKEPTICAL INQUIRER, Box 703, Buffalo, NY 14226-0703. Old address as well as new are necessary for change of subscriber's address, with six weeks advance notice. Subscribers to THE SKEPTICAL INQUIRER may not speak on behalf of CSICOP or THE SKEPTICAL INQUIRER.

Inquiries from the media and the public about the work of the Committee should be made to Paul Kurtz, Chairman, CSICOP, Box 703, Buffalo, NY 14226-0703. Tel.: (716) 636-1425. FAX: (716)-636-1733.

Articles, reports, reviews, and letters published in THE SKEPTICAL INQUIRER represent the views and work of individual authors. Their publication does not necessarily constitute an endorsement by CSICOP or its members unless so stated.

THE SKEPTICAL INQUIRER is indexed in the *Readers' Guide to Periodical Literature.*

Copyright ©1992 by the Committee for the Scientific Investigation of Claims of the Paranormal, 3965 Rensch Road, Buffalo, NY 14228. All rights reserved. THE SKEPTICAL INQUIRER is available on 16mm microfilm, 35mm microfilm, and 105mm microfiche from University Microfilms International.

Subscription Rates: Individuals, libraries, and institutions, $25.00 a year; back issues, $6.25 each.

Postmaster: THE SKEPTICAL INQUIRER is published quarterly, Winter, Spring, Summer, and Fall. Printed in the U.S.A. Second-class postage paid at Buffalo, New York, and additional mailing offices. Send changes of address to THE SKEPTICAL INQUIRER, Box 703, Buffalo, NY 14226-0703.

SKEPTICAL INQUIRER

Vol. 16, No. 2, Winter 1992

ISSN 0194-6730

Journal of the Committee for the Scientific Investigation of Claims of the Paranormal

FROM THE CHAIRMAN

On Being Sued: The Chilling of Freedom of Expression — *Paul Kurtz* — **114**

ARTICLES

The Crop-Circle Phenomenon: An Investigative Report — *Joe Nickell and John F. Fischer* — **136**

Update on the 'Mars Effect' — *Suitbert Ertel* — **150**

A Dissenting Note on Ertel's "Update" — *Paul Kurtz* — **161**

Magic Melanin: Spreading Scientific Illiteracy Among Minorities: Part II — *Bernard Ortiz de Montellano* — **162**

Adventures in Science and Cyclosophy — *Cornelis de Jager* — **167**

Searching for Security in the Mystical — *Martin R. Grimmer* — **173**

NEWS AND COMMENT — **120**

EuroSkeptics 1991 Conference / Cold Fusion Chicken / $565,000 Settlement Against Ferreri/ Another Job for Pell's Aide / CD Hoax / Another Savvy Stylebook / A Call from Elvis? / No More 666s

NOTES OF A FRINGE-WATCHER

Probability Paradoxes — *Martin Gardner* — **129**

PSYCHIC VIBRATIONS

Creationists, Cosmologies, and Crashes — *Robert Sheaffer* — **133**

BOOK REVIEWS

Thomas Gilovich, *How We Know What Isn't So: The Fallibility of Human Reasoning in Everyday Life* — *Robert Kinnison* — **177**

Frank Close, *Too Hot to Handle* — *Terence Hines* — **179**

James Randi: Psychic Investigator, the TV series and the book — *Wendy M. Grossman* — **182**

Richard J. Brenneman, *Deadly Blessings: Faith Healing on Trial* — *David Lonergan* — **184**

Keith S. Thomson, *Living Fossil* — *Paul T. Riddell* — **185**

NEW BOOKS — **187**

ARTICLES OF NOTE — **188**

FOLLOW-UP — **192**

'Three-Door' Problem Provokes Letters, Controversy / Mims Responds to Gardner and Gardner Replies

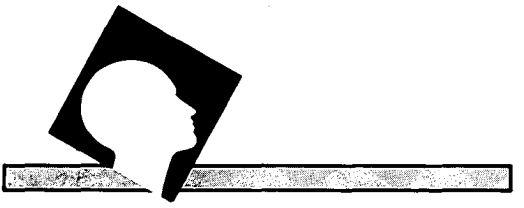
FORUM — **204**

LETTERS TO THE EDITOR — **212**

CSICOP NEWS — **221**

Cover photo: Crawley "pictogram" near Salisbury, July 31, 1990, courtesy Busty Taylor / Centre for Crop Circle Studies. Cover design by Jacqueline Cooke.

From the Chairman



On Being Sued: The Chilling of Freedom of Expression

PAUL KURTZ

It is not often that I agree with Vice-President Dan Quayle. His recent speech to the American Bar Association meeting in Atlanta, however, has made a telling point. For CSICOP and two other organizations with which I am affiliated have been threatened by at least 19 lawsuits over the years and are currently actively involved in four. Mr. Quayle asked, "Does America really need 70 percent of the world's lawyers?" And he deplored the drain on our economy caused by an estimated 18 million new litigation cases every year. Quayle pointed out "the staggering expense and delay" that the system caused. He focused most directly on the abuse of discovery, pre-trial interrogatories and depositions, and the dangers of the unbridled punitive damages now being awarded.

At the present time CSICOP is named as codefendant along with James Randi in two libel suits. The first, initiated in 1989 by Eldon Byrd, a Maryland "paranormal researcher," requests $38 million in damages. The second, by Uri Geller, the self-proclaimed "psychic," was entered in 1991 and demands damages of $15 million. (An earlier suit by Geller in New York against Randi and CSICOP was dismissed on a technicality for it exceeded the statute of limitations—a complaint must be entered no later than one year after an alleged libel incident occurs.)

The Byrd and Geller cases have received considerable media attention. Many people have asked what CSICOP's position is regarding these suits. We have been under strict instructions from our attorneys, however, to limit our public comments. Some people, friends as well as critics, have accused CSICOP of "abandoning James Randi." Others have asked if we are unconcerned that free speech is being stifled by such suits. Randi has even resigned from CSICOP in order to protect it from further suits.

I think that some clarification is in order. Let me state right off that we have not abandoned James Randi, and we are keenly sensitive to the effort by some to silence CSICOP and its supporters. My remarks here also are tempered by legal constraints. Nevertheless, I would like to make several points; and especially to demonstrate

A longer version of this article appeared in the CSICOP newsletter, *Skeptical Briefs* (vol. 1, no. 3).

the difficult and perilous situation that the skeptical movement now faces.

At the present time, CSICOP is partially covered by libel insurance. These policies are designed to protect CSICOP, the SKEPTICAL INQUIRER, *Skeptical Briefs*, and CSICOP's other publications. They also serve to protect the officers and members of the Board of Directors and the Executive Council of CSICOP should a lawsuit be brought against them pertaining to any official statements made on CSICOP's behalf in its publications or at its conferences. Usually when a suit has been filed we must retain counsel in the city or district where it is filed, which is an onerous burden of time and expense.

In the Eldon Byrd case, CSICOP is covered by Kemper Insurance Company by a policy that has since been amended to remove coverage for libel. Kemper agreed to cover CSICOP for the Byrd case because the alleged incidents for which the suit was entered occurred prior to this change. Kemper Insurance, however declined to cover James Randi in the Byrd case, because he was not acting as an agent of CSICOP and was not authorized by CSICOP to make these remarks. He was not acting within the scope of his duties as a member of CSICOP's Executive Council. The lawsuit concerns published statements about Byrd's personal life that Randi is said to have made in an interview in *Twilight Zone* magazine (which is now defunct) and remarks also allegedly made by Randi in a question-and-answer period following a speech at a meeting of the New York Area Skeptics (an independent, autonomous skeptics group).

In the second suit now being contested, Uri Geller is suing Randi, CSICOP, and the *International Herald Tribune* for statements Randi allegedly made to that newspaper about Geller. Although CSICOP was not even mentioned in the article, nor was CSICOP aware of the article until well after publication, it has nevertheless also been named in the suit. Our new insurance carrier has refused to cover either Randi or CSICOP in this case, claiming that its coverage was not blanket, and that it was not to be construed so broadly as to cover any or all remarks that anyone associated with CSICOP in any capacity made anywhere in the world.

These suits presented a profound quandary for the CSICOP Executive Council, for its members are deeply appreciative, indeed extremely grateful, for Randi's longstanding defense of rationality and his critiques of paranormal claims, and none of us would want skeptics to be intimidated by those who may seek to silence them.

However, the question is: Should CSICOP be held liable for any and all remarks that Randi has made? The Executive Council has been unanimous in its view that CSICOP could not as a corporate body be held responsible for anything and everything that might be said by anyone associated with CSICOP—whether a fellow, a scientific consultant, a member of the Executive Council, or a sympathetic skeptic. To do so would expose CSICOP to such risk that we could no longer function as a viable organization. This has been the longstanding official policy of CSICOP published and reiterated many times. Not only did Randi consistently agree with this basic policy of CSICOP while he was a member of the Executive Council, but he explicitly informed CSICOP's Executive Council on and off the record on several occasions that he was speaking as an individual and not on behalf of CSICOP at the times he allegedly made the statements that

are the basis of the Byrd and Geller suits.

CSICOP's policy applies equally to the 70 or more local, regional, and national skeptics groups that have sprung up worldwide and share our aims. These are all independent, autonomous, self-governing groups. We welcome their cooperation; but our policy as outlined above is also explicitly stated in the SKEPTICAL INQUIRER. We thus have made it very clear in our publications, statements and declarations, that neither these groups nor their individual members can speak for CSICOP unless specifically authorized to do so. To maintain otherwise would make it impossible to function.

Who could claim, for example, that a university should be held liable for anything that its professors might say or do in their professional and nonprofessional activities throughout the world? It would be likewise ridiculous to hold that the American Association for the Advancement of Science is responsible for any statements made by scientists participating in their public meetings, or to hold them responsible for anything any of their board members might say publicly that is unrelated to the AAAS. Similarly, if a member of CSICOP's Executive Council makes a public statement or publishes his or her views in a book, in an article, or on radio or television, and was not explicitly authorized by CSICOP to speak on CSICOP's behalf, then we surely cannot be held responsible.

Byrd and Geller have sued CSICOP for remarks allegedly made by Randi. And we have petitioned the court to dismiss the case against CSICOP on the grounds that Randi was not speaking on CSICOP's behalf.

An important claim made by Geller and by Byrd was that Randi had attacked them personally. I am constrained by our lawyers from repeating Randi's alleged remarks for fear of being implicated in further suits. Suffice it to say that CSICOP as a scientific body cannot be held responsible for personal remarks made about individuals. CSICOP is concerned only with scientific questions and not with the private lives of those making paranormal claims, unless a specific fact pertains to the science at issue. We have always maintained that ad hominem arguments must be avoided by those on both sides of any critical debate.

Randi and Geller have had a longstanding battle that predates the formation of CSICOP. We have no objections to Randi's criticism of the alleged facts of Geller's claims and we have consistently applauded him when he has pointed out normal explanations for Geller's feats. Geller is a public figure and when he makes claims in the marketplace about extraordinary powers we believe that they should be critically examined. But it is not within the scope of CSICOP as a scientific body to make statements about Geller's or Byrd's personal behavior.

We were nevertheless required to enter into court and defend ourselves every step of the way. What this has meant is a drain on staff time and on our resources. In particular, Barry Karr, Executive Director of CSICOP, has spent an inordinate amount of his time and energy in responding to these suits. CSICOP's legal fees in these cases have already amounted to tens of thousands of dollars, as have Randi's, and promise to continue to grow. On several occasions, we have offered to work out arrangements with Randi that would allow CSICOP to help raise money for his legal defense. In each case Randi said that the idea would have to be discussed with his attorneys. None of the offers

were ever accepted.

A particularly unfortunate aspect of this controversy has not been publicly aired thus far. Since it is in the transcripts of the many documents (now several feet high) that have been filed in these cases and thus part of the public record, we should face it directly. That is that Randi's attorneys have maintained in their defense that Randi was "acting as the agent of CSICOP" and that he was explictly authorized by the CSICOP Executive Council to make the statements that he did about the personal lives of Geller and Byrd.

These claims are false. Our insurer's counsel has repeatedly requested that Randi's attorneys withdraw them. Unfortunately, they have not yet done so.

The implications of the Geller and Bryd cases transcend the immediate issues of the suit. For, if the court sustains the claim that Randi was speaking on CSICOP's behalf, then it would be difficult for us to conduct business: Anyone associated with our efforts or friendly to the skeptics' cause could pose a risk to CSICOP.

The underlying issue in all of this is that some paranormalists feel aggrieved by skeptical criticism and may be resorting to lawsuits to drain skeptics financially. It is well known that some organizations have often responded to their critics by attempting to tie them up in lawsuits, or by the threat of lawsuits.

Although we have encouraged criticism of paranormal claims, we have insisted that it be responsible, fair, and objective and that ad hominem attacks be avoided. My motto has been to avoid lawsuits wherever possible in order not to be consumed by them. However, when the principles upon which CSICOP was founded are at stake, we are prepared to do battle all the way, if it should prove necessary.

CSICOP and the SKEPTICAL INQUIRER have often presented controversial and provocative critiques that we consider important scientific contributions. We believe deeply in a free press, freedom of speech and scientific inquiry, and the importance of dissent. The present Uri Geller suit, as CSICOP's Washington, D.C., attorney James Grossberg told the *Washington Post*, is the "kind of libel suit being used as a means of silencing debate on significant scientific issues" and it could have "a chilling effect on full and frank discussion of these issues among the public—including members of the scientific community." However, we will continue to provide skeptical critiques of paranormal claims.

We have made great progress in the past decades and we have great plans for future development. It is critical that we proceed with building a permanent headquarters, for we need to provide more space for our staff and for our research library and its vast collection of books and journals on skepticism. We also need to continue to develop our educational activities through the Institute of Inquiry and our skeptical outreach in the media. The only way we will be able to continue into the twenty-first century is if our subscribers and supporters help us fulfill these ambitious goals.

We are not abandoning anyone in the stormy seas of misfortune, but are attempting to keep the skeptics' ship afloat. If CSICOP is to weather the storm, however, skeptical inquirers will need to stand together. Our commitment to the use of critical intelligence to test truth claims seems unique in the current context. We are often the lone voice defending rationality. We do not intend to be silenced. ■

CSICOP
1992 SEMINARS

Magic for Skeptics
Trickery and the Paranormal

Lexington, Kentucky
Friday-Sunday, April 17-19

Joe Nickell and Robert A. Baker

History of Magic and Its Association with the Paranormal
(a slide-illustrated presentation)

Magic Tricks I and II
(Learning Conjuring Effects)

Magic and Perception

Mentalism and Tricks of Psychics

Saturday Night Banquet and Entertainment

Joe Nickell teaches technical writing at the University of Kentucky. A former professional stage magician and private investigator, he is the author of *Inquest on the Shroud of Turin*, *Secrets of the Supernatural*, and many other books, and a member of the CSICOP Executive Council.

Robert A. Baker is professor emeritus of psychology at the University of Kentucky and author of *They Call It Hypnosis*, *Hidden Memories*, and other books. He is a Fellow of CSICOP.

For registration information, contact Barry Karr, CSICOP, P.O. Box 703, Buffalo, NY 14226-0703, or call him at 716-636-1425.

The Skeptic's Toolbox

University of Oregon at Eugene
Thursday-Monday, August 20-24

The workshop will begin with dinner and an introduction on Thursday night, August 20, and will adjourn at noon on Monday. Our goal is to sharpen the ability of skeptics to deal with various situations. Some of the topics to be covered by the five lecturers are:

The Brain and Psychic Experience
How Our Minds Can Deceive Us
How Children Succeed in Fooling Adults
The Statistics of Coincidences
The Dowsing Rod and the Ouija Board
How to Avoid Legal Pitfalls
Pitfalls in Psychical Research
How to Deal with the Media and Confrontational Challenges
How to Convince Strangers You Are Psychic
How to Distinguish Good from Corrupt Information

Ray Hyman, the workshop coordinator, is a professor of psychology at the University of Oregon and a member of the CSICOP Executive Council. He has written extensively on the critical evaluation of paranormal claims. With a background in professional magic, he specializes in the psychology of human error and deception.

Barry Beyerstein, professor of psychology at Simon Fraser University, Vancouver, B.C., and a member of the CSICOP Executive Council, specializes in how the brain determines behavior. He has researched how apparently psychic experiences can be due to malfunctions in the brain.

Loren Pankratz, a clinical psychologist with the Veterans Administration in Portland, Oregon, is the world's foremost authority on the Munchausen Syndrome, which refers to patients who repeatedly and successfully fake serious illnesses. He has studied quackery in all its guises, and is a magician who writes on the psychology of conjuring.

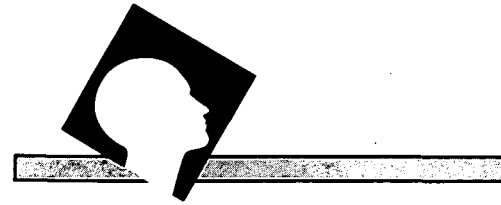
Jeff Mayhew, whose degree is in physics, has pioneered in applying computer graphics and the latest audiovisual tools to foster skepticism. He will demonstrate how to target audiences and how to deliver your message most effectively.

Jerry Andrus, magician, inventor, and iconoclast, has lectured at Harvard, MIT, the University of Oregon, and elsewhere on how people reach the wrong conclusions for the "right" reasons. He has created many optical illusions and is a consultant to major science museums.

Take advantage of this exciting opportunity to sharpen your skeptical skills, and join us on the Sunday fieldtrip to the "Oregon Vortex," one of Oregon's major "paranormal" geographical sites.

For registration information, contact Barry Karr, CSICOP, P.O Box 703, Buffalo, NY 14226-0703, or call him at 716-636-1425.

News and Comment



Fifth European Skeptic's Conference: Mars in Amsterdam

Where do you think you would be if you heard these statements voiced in normal conversation?

"Skepticism is an attempt to bring science back to the general public."

"It is immoral to sell illusions as truth."

"People need psychological placebos—I will leave it at that if I don't have a better alternative."

If you had guessed it would be a meeting of skeptics, you'd be right.

The venue for these statements was the fifth meeting of European skeptics groups (or EuroSkeptics), held October 4-5, 1991, at the Park Hotel in Amsterdam, the Netherlands. The meeting was organized by the Dutch skeptics group, Stichting Skepsis. The conference brought together more than a hundred participants from Europe and the United States. Previous meetings have been held in France, the United Kingdom, Germany, and Belgium.

A wide variety of topics was discussed by the 16 scheduled speakers during this two-day event, including: understanding the paranormal; quantum mechanics; alternative medicine; state interference in paranormal practices; science in daily life; crop circles; placebo effects and practitioners; dowsing claims; parapsychology; Noah's flood; a report on paranormal research projects conducted by university students; and the subject that seemed to promote the greatest level of interest—the continuing debate over the so-called Mars effect of Françoise and Michel Gauquelin.

The Guaquelins have claimed that their research shows a correlation between the birth of sports champions and the position of the planet Mars. In the Saturday morning session three Dutch researchers offered alternative explanations for the effect. For example, Cornelis de Jager, of the Laboratory for Space Research at the University of Utrecht, said: "The Gauquelin/Ertel effect is not necessarily physically related to the position of Mars but may be caused by the fact that the birth of eminent sportsmen does show an annual or daily variation." And the Dutch science journalist C. E. Koppeschaar stated: "Gauquelin found a correlation between the birth of sports champions and the position of Mars in certain sectors of the sky. Similar correlations were found for other professions. We show that these are most likely spurious effects. A thorough analysis of Gauquelin's data reveals annual and diurnal birth rates which are clearly related to photoperiodicity." Françoise Gauquelin and Suitbert Ertel, professor of psychology at the University of Göttingen, presented rebuttals to the skeptics. Gauquelin began by stating that she was not an astrologer, and "I am not in favor of astrology at all."

Suitbert Ertel, Françoise Gauquelin, Claude Benski, and Paul Kurtz discuss the "Mars effect" between conference sessions. (Photo by Barry Karr)

She maintained that during their research the Gauquelins had taken into account the objections raised by the Dutch researchers. She expressed an interest in working in cooperation with the Dutch and others to see whether "there is an effect or not."

Paul Kurtz, who read a paper at the conference, said that efforts should be made to independently replicate Gauquelin's findings.

As with all conferences some of the best moments occurred outside of the formal sessions. During one such break, leaders from several of the national skeptics groups met in the lobby of the Park Hotel to discuss possible locations for future meetings. What was striking was the enthusiasm exhibited by the groups to bring the next conference to their own country. At the EuroSkeptics meeting in Belgium in 1990, the Italian group, CICAP, made a formal request to host the 1992 European conference. This year in Amsterdam, the offer was voted upon and accepted. For 1993 a joint proposal was offered by the Wessex Skeptics and the London Student Skeptics of the United Kingdom.

The Stichting Skepsis, and in particular Jan Willem Nienhuys, Dick Zeilstra, and Cornelis de Jager, are to be congratulated for this year's very successful meeting.

While in Europe, I visited Hungary and met with physicist Gyula Bencze, Gyula Staar, editor of the Science Society's *Termeszet Vilaga*, and other Hungarian scientists, including Janos Szentagothai, former president of the Academy of Sciences and now a Member of Parliament, who was one of the 186 scientists who signed the "Objections to Astrology" document that sparked the formation of CSICOP.

At our meeting, these scientists planned the formation of a committee in Hungary that would cooperate with CSICOP and other skeptics groups. Their first project will be to draft an open letter to newspapers in Hungary explaining why they feel such a committee is needed and stressing the importance of defending science against pseudoscience. Articles from the SKEPTICAL INQUIRER have already begun to appear in *Termeszet Vilager*.

—Barry Karr
CSICOP Executive Director

Cold Fusion Chicken

In *Growing Today* (1990:21-22), a widely read farming magazine in New Zealand, readers are told that a "French scientist" named Kevran has discovered that a newly hatched chick has four times more calcium in its skeleton than the egg did when laid, and the extra calcium does not come from the eggshell. Moreover, Kevran found that experimental chickens somehow off-load four times as much calcium in their eggs and droppings as they get from their feed, and the extra does not come from their skeletons.

Where *does* it come from, then? We're told that if the chickens are given some extra potassium, they can make the missing calcium by "combining" hydrogen with the potassium. For readers who wonder how they go about doing that, the author explains.

> A bit of atomic chemistry is helpful. It is the atomic nuclei, rather than the outer electrons, that alter. The nuclei of elements other than hydrogen contain both neutrons and protons. The number of protons is called the atomic number of the element, and written as a small number to the lower left of the element. For example, potassium has an atomic number of 19 ($_{19}K$), hydrogen is 1 ($_{1}H$) and calcium is 20 ($_{20}Ca$). If you take a potassium atom and add a hydrogen atom, you get a calcium atom ($_{19}K + {}_{1}H = {}_{20}Ca$). Calcium can also be formed by adding oxygen to magnesium ($_{12}Mg + {}_{8}O = {}_{20}Ca$) or by adding carbon to silica ($_{14}Si + {}_{6}C = {}_{20}Ca$). Or you can remove hydrogen from calcium to get potassium, or combine sodium and oxygen ($_{11}Na + {}_{8}O = {}_{19}K$).

The author claims that there's an important lesson here—if a soil is deficient in an essential element like calcium, we shouldn't just top it up from a handy fertilizer bag, but instead should "balance" all the *other* nutrients in the soil, because soil microbes can then use them to make the missing elements. Are you short of potassium in your organic garden? Not to worry—soil microbes will make up the deficit by combining sodium and oxygen, or by stripping hydrogen from calcium.

> This, maybe, is how soil microbes, and some plants, can enrich poor soils with nutrients and why rotation and companion crops work so well. Kevran believes microorganisms are of the utmost importance in correcting soil imbalances, while overuse of synthetic NKP fertilisers leads to imbalances and unhealthy crops.

If the author is right, what a breakthrough!—even a desperately infertile soil could be goosed into yielding magnificent harvests just by inoculating it with microbes that have a flair for adding up atomic numbers. But, before we accept cold-fusion chickens, eggs, and compost as fact, we'll need far more convincing evidence, because the notion contradicts some long-held scientific ideas.

Modern atomic theory pictures an atom as a central nucleus surrounded by electrons. When atoms react chemically the outcome depends on how their outermost electrons interact (Atkins 1987:3-6). Chemical reactions cannot create or destroy atoms—rather, they can only rearrange existing atoms into new molecules. However, the author is describing *nuclear* reactions like fusion (when nuclei combine) and fission (when a nucleus breaks up). Bad luck, we now know enough about nuclear reactions to be

confident that they don't occur in chickens and eggs: (1) fusion requires too high a start-up temperature, and (2) both fusion and fission release such prodigious amounts of energy that we'd surely notice them.

1. As far as we know, nuclear fusion reactions will start up only at temperatures of millions of degrees Celsius—that's why fusion at room temperature has been dubbed *cold* fusion. Such unimaginable heat is found under only extreme conditions like those found inside stars, thermonuclear explosions, and plasmas. To make calcium and other elements by fusion without vaporizing themselves, chicken eggs would have to do what cold-fusion researchers have *not* done yet, lower the ignition temperature of fusion to no more than body-heat. But even if chickens somehow managed to do that, we'd notice. Why?

2. If chicks inside their eggs really are making calcium out of oxygen and magnesium, then they're somehow pulling off the nuclear fusion reaction

$$\underset{15.994915}{{}^{16}_{8}\mathrm{O}} + \underset{23.985042}{{}^{24}_{12}\mathrm{Mg}} = \underset{39.962591}{{}^{40}_{20}\mathrm{Ca}}$$

During that reaction, 0.017366 units of mass go missing (Weast 1987), released as energy. That's a *lot* of energy—using Einstein's famous formula $E = mc^2$, we can calculate it at 1.56×10^{12} joules per mole of calcium fused. If the chick makes three-quarters of its calcium, the fusion would release about 9×10^8 joules altogether. If that energy were to be released steadily during the egg's 21-day incubation, the egg would heat up four times faster than an egg that's being soft-boiled—it would be *hard*-boiled in three minutes, and probably couldn't radiate heat quickly enough to escape flashing into steam soon after. Eggs don't do that, and so we can conclude that it's very unlikely that the chicks developing inside them are busily making their calcium by fusing oxygen and magnesium.

There's another reason for doubting that chickens are cold-fusing vital elements like calcium and potassium: What's to stop them from going further and fusing up some really exotic elements, like gold and silver, for example? After all, to make gold they'd only have to fuse three calcium atoms and one potassium atom, and they'd get silver just by fusing two atoms of calcium and one of potassium. Surely by chance alone at least a few of the millions of chickens that have ever lived would have pulled off that stunt by now, and somebody would have noticed, especially during the centuries when alchemists were looking for cheap and quick ways to make precious metals. Admittedly, Aesop reported that a goose made golden eggs seemingly out of nothing:

> Thinking to get at once all the gold the Goose could give, he killed it and opened it only to find—nothing. (Bartlett 1955).

Maybe that goose was cold-fusing gold, but the report itself notes that the only evidence was destroyed, and during the 25 centuries since then, no other reliable evidence has surfaced. Can we conclude that cold-fusion chickens are a crock?

—Bill Malcolm and Phil Garnock-Jones

Note

Today's nuclear physicists can synthesize gold in reactors and particle accelerators by nuclear reactions with neighboring elements (e.g., platinum or thallium), but the cost of such production far exceeds the gold's commercial value. However, the above-mentioned reactions synthesizing silver and gold from three or four lighter elements are impossible for two reasons: (1) The nuclei

of the heavier elements require more neutrons to be stable. Three calcium nuclei and one potassium nucleus would produce a fused nucleus with 79 protons (i.e., gold) and 159 neutrons; the stable gold nucleus would require an additional 38 neutrons! (2) Under most conditions found in the universe, binary nuclear reactions predominate; the probability of three or more particles reacting together at one time becomes vanishingly small; even successive reactions (involving intermediate nuclei of zirconium and neodymium) would be impossible.

References

Atkins, P. W. 1987. *Molecules*, New York: HPHLP.

Bartlett, J. 1955. Aesop, c 550 B.C., *Familiar Quotations*, 5th ed. Boston: Little, Brown.

Growing Today. 1990. December.

McQuarrie, D. A., and P. A. Rock. 1984. *General Chemistry*. New York: W. H. Freeman.

Weast, R. C. 1987. *Handbook of Chemistry and Physics, First Student Edition*. Boca Raton, Fla.

Bill Malcolm is an American-trained physiological ecologist living in New Zealand, and Phil Garnock-Jones is a plant systematist and one of the authors of the latest volume of The New Zealand Flora.

Jury Awards $565,000 in Suit Against Ferreri Technique

The originator of a controversial technique that involves squeezing children's heads and pressing on their eye sockets to treat dyslexia and other learning disabilities has lost a legal battle in northern California. The controversy was the subject of *SI*'s Fall 1990 cover article, "Neural Organization Technique: Treatment or Torture?"

Carl A. Ferreri, the New York chiropractor who promoted the technique, was ordered by a jury in Crescent City, California, to pay $565,000 in damages. The judgment will go to seven children and their parents who filed suit three years ago for physical and emotional pain they blamed on a "research project" inspired by Ferreri. Witnesses, including neurologists, testified that the technique, marketed worldwide, has no effect aside from the pain it inflicts.

The "research project" had been sponsored by the Del Norte Unified School District. The resulting controversy led to a recall election that removed the superintendent and school-board members.

The unanimous verdict on September 27, 1991, in Del Norte County Superior Court was said to be the largest damage award in the county's history. Ferreri had offered free treatments for dyslexia, learning problems, and Down's syndrome. Testimony showed that the school board ignored two local teachers when they repeatedly protested that the Ferreri technique had been discredited in Utah, Texas, and other states.

Other defendants in the case—two chiropractors who, following Ferreri's demonstration, carried out the subsequent treatments, which they claimed "removes the static from the nervous system"—settled out of court for amounts reported to be $148,000 and $59,000, respectively.

—*K.F.*

Senator's Pseudoscience Aide Quits

C. B. Scott Jones, the aide to Senator Claiborne Pell (D-R.I.) who caused a stir in Washington when he warned Defense Secre-

tary Richard B. Cheney that coded messages could be heard when speeches by Bush administration officials were played backwards (*SI*, Summer 1991), has moved on to another job.

Jones, Pell's special assistant, whose full-time assignment was to promote federal research into psychic phenomena, quit to become president of an organization called the Human Potential Foundation. Pell, Capitol Hill's best-known fan of psychic phenomena, helped create the foundation in 1989 to investigate the paranormal.

One month before election day 1990, with Pell up for reelection and U.S. troops preparing for the war against Iraq, Jones warned that the word *simone* appeared when tapes of speeches made by Cheney, Secretary of State James A. Baker III, and President Bush were played backwards. Jones said the officials might be inadvertently giving out an important code word. But *simone* turned out to be the sound created when the word *enormous* is played backwards.

—*C. Eugene Emery Jr.*

Gene Emery is the science writer for the Providence Journal.

Chopin Recorded Live? A Classic CD Xoha

Music-loving readers of the SKEPTICAL INQUIRER may be interested in following the progress of a recent hoax.

The British magazine *Classic CD* is devoted to classical music and compact discs. Each issue comes with a 70-minute compact disc that contains samples of many of the recordings reviewed in the issue.

The editors decided to spice up the April 1991 issue with the announcement of a major discovery: a recording by none other than Frederic Chopin himself.

But, first, a little history. Thomas Edison was the first to actually record and play back sound; but just as the French credit Charles Cros (who thought of the idea before Edison), the British date the beginning of sound recording to 1857, the year of Leon Scott de Martinville's invention of the phonautograph. This device used a quill to record sound vibrations on a cylinder of smoked glass. The sounds could not be played back but could be studied under a magnifying glass.

PREMIERE RECORDING

The first recording ever

The music world is about to be shaken by a new CD containing historic recordings of Chopin waltzes. Its final track, the "Minute Waltz", is the ultimate in historicity, for the pianist is none other than Frederick Chopin. Eric Lea-Picton reports on this first recording from 1848

The story began in the summer of 1990. Construction workers digging the foundations for a block of flats on the outskirts of Nohant, a town in central France, unearthed a steel box. The box had obviously been buried for some time and a local historian, Jean-Michel Baillat, was called in to investigate. On opening it he discovered a glass cylinder, and a yellowing three-page document, the writing faded but just legible.

It didn't take Baillat long to realise that the find was of major significance. The author of the document was one Hippolyte Sot, resident in Nohant during the 1840s, and in it Sot described how he had perfected a ... time. Unfortunately for him, however, his genius was coupled with some outlandish characteristics which led people to assume that he was simply a crank. His beard hung down to below his waist, he seldom washed and he had a habit of addressing people he met in the street in Latin or Greek. It was not a personality calculated to impress the fellows of the Académie des Sciences in Paris and when he turned up there one day in 1849 with the phonautograph he was laughed out of the building. Repeated further attempts at displaying his invention also met with rebuttal and an embittered Sot decided to bury the details of his discovery with the precious Chopin cylinder at the bottom of his garden.

CHOPIN
MINUTE WALTZ

Beneath the scratchiness of this world's first ever recording is the evidence of the brilliance of Chopin as a pianist: he plays his "Minute Waltz" in exactly one minute which is faster than is possible on a modern piano. Chopin's Pleyel piano would have had a very light touch, but the dexterity displayed is none the less remarkable. It is likely that Chopin had to play at this speed to fit the piece onto the cylinder, which could only carry just over a minute of recorded sound.

Classic CD's Chopin announcement.

But suppose some earlier inventor had built an identical device. It would have to have been an eccentric who was scoffed at by the establishment and had then abandoned his invention; otherwise we would have heard of him. But wait, he has to preserve his invention somehow—let's have him bury it in the back yard in the hope that posterity would be more kind.

Which musician would we most like to have a recording of? Chopin, of course. Assuming the recording apparatus is so primitive it yields only one minute of playing time, the Minute Waltz is the perfect piece.

And that is how the eccentric inventor Hippolyte Sot happened to drop in on Chopin in 1848, the last year of Chopin's life. The Minute Waltz was recorded on the smoked-glass cylinder, it was buried and discovered in 1990, and the French sound laboratory IRCAM used lasers and computers to reconstruct the sound just in time to be included as the last track of April's sampler CD. The recording is also available on the XOHA label (rearrange the letters) as record number 010491 (which is British for 040191). Jolly good fun.

The more familiar you are with sound processing, the more convincing the recording is. A loud rhythmic thump at intervals of one-half second suggests that the cylinder spent 152 years lying on its side wearing off some of the lampblack. Evidently it rotates at the speed of 120 rpm, close to the 150 rpm of Edison cylinders. The spectral sound is similar to the SoundStream-enhanced Caruso recordings on RCA. There is no trace of flutter; the IRCAM technicians apparently have become very good at eliminating flutter. Too bad they aren't so good at getting rid of other speed variations. And the pianist is remarkably good.

Curious, I called the editorial offices of *Classic CD* at 011-44-225-442244. The editor confessed that Erica Lea-Picton had fabricated the whole thing. A computer sequencer played the electric piano. The engineers recorded it on reel-to-reel tape (the British editor called it "head-to-head tape") while brushing the microphone. Then they unwound the tape, scrunched it and stomped on it to add some more interesting noises. "We had a lot of fun making it." They never expected to fool anybody; "XOHA CD010491" should be obvious, right?

Well, maybe. On April 30, Richard Buell mentioned the discovery in the *Boston Globe* and took no position either way as to its authenticity, but he was put off by the enthusiastic carpentry lesson (that rhythmic thump) going on in the next room. I wrote him a letter, and in his next column on May 7 he exposed the hoax.

One would hope that would be the end of it. But it seems to have entered the folklore like the Shroud of Turin and H. L. Mencken's famous bathtub hoax. The October issue of *On The Air Magazine* has the question in its Trivia Quiz: "What is the first musical composition ever recorded for posterity, and who performed it?" (Guess

who?) Granted, the reputation of this quiz has already been tainted in connection with the performance directions for Busoni's Piano Concerto. Decades ago someone somehow mistranslated the Italian for "invisible" as "naked" in the English translation of the directions for the six-part men's chorus, which is supposed to sing unseen in the last movement. Thus the trivia question "What piano concerto has never been performed according to the composer's directions, and why?"

Readers should keep an eye out for further spreading of the Chopin hoax.

—*Mark Lutton*

Mark Lutton lives in Malden, Massachusetts.

Another Stylebook With Style (and Wit)

SKEPTICAL INQUIRER editor Kendrick Frazier (*SI*, Summer 1991:353) brings to our attention the entries for Astrology, Zodiac, and Psychic in the stylebook of the *Toronto Globe and Mail*. Frazier concludes that while the *Globe and Mail* stylebook is not perfect, it is a step in the right direction, unlike the Associated Press stylebook, which has no mention whatsoever of any of these words.

After reading the Frazier article, I was happy to sort through *Words on Words*, a stylebook that I had been required to purchase while attending the Ohio State University School of Journalism. Even though it is not a true stylebook in the sense of the *AP Stylebook*, *Words on Words* (Columbia University Press) by John B. Bremner, professor of journalism at the University of Kansas, has particularly fun entries for Astronomy and Astrology.

> Astrology—One of the problems of news judgment is how much you should give readers what you think they want and how much you should give them what you think they need. It helps to know that what you think they want is what they want and that what you think they need is what they need.
>
> Sometimes you should play God and give readers what you think they need but don't want. And sometimes you shouldn't give them what you think they want but don't need.
>
> Astrologers (from the Greek *astron*, star, and *legein*, to speak) pretend they can predict the course of human events from the course of celestial bodies. Despite the popularity of astrology as indicated by readership studies, why run a column on a pseudoscience? Why perpetuate the racket?

Then, under Astronomy, we find:

> Astronomy—From Greek *astron*, star, and *nemein*, to arrange, hence the scientific study of the celestial bodies and phenomena beyond the earth. Astronomy is one of the classical liberal arts. Astrology is one of the classical con arts.

While the entries for Pseudo and Psychic aren't as much fun, they show that Bremner did his homework:

> Pseudo—Greek *pseudos*, false, whence pseudonym, a fictitious name, a pen name, and words coined by the addition of pseudo to connote sham or fakery, such as pseudointellectual, pseudoscientific. Note the spelling: not psuedo, as is often seen.

Under the general heading of "Psycho," we find "psychic, pertaining to the mind, extrasensory, unex-

plained by physical causes; as a noun, someone seemingly responsive to nonphysical forces, a medium.

Perhaps the most impressive thing about the *Words on Words* entries on Astronomy and Astrology is that the wit may allow some reporters, writers, and editors to remember something that all too many people pass over without retaining.

—*Robert Bunge*

Had a Call from 'Mr. Carpenter' Lately?

Straight shooting from representatives of the media is a rarity where issues of skepticism and belief are concerned. A refreshing exception to the depressing rule is Leonore Fleischer, a novelist and columnist who writes a sort of publishing-industry gossip column for *Publishers Weekly* titled "Talk of the Trade." Fleischer recently (January 11, 1991 issue) commented on a tale told to her by Jonathan Silverman of Shapolsky Publishers. That company happens to be the publisher of not one but two books about the late Elvis Presley: *Is Elvis Alive?* and *The Elvis Files: Was His Death Faked?* Both books are the work of writer Gail Brewer-Giorgio. Silverman told Fleischer the following story.

"We received a call from a man who was based in the far west and who gave his name as Scott Carpenter. He said he was the funeral director for Elvis's funeral and was very eager to speak with Gail Brewer-Giorgio. He also stated emphatically that he was positive Gail's theory about Elvis was correct, based on what he had seen at the funeral and so forth. When I told Gail that we'd received Mr. Carpenter's call, she was deeply intrigued, and for a very unusual reason. It turns out that 'Carpenter' is one of the code names Elvis uses when he makes contract with people by phone now! So it appears we may have heard from the King himself."

Fleischer printed Silverman's remarks in her column and appended her own eloquent comment, as follows:

"Jonathan, get a grip. Listen carefully. Paul McCartney is alive. Maybe Judge Crater is alive, although he'd be about 110 years old now. It's even possible that Jimmy Hoffa is not built into some cornerstone on Sixth Avenue, and is alive. Farfetched, but possible. But Elvis Aron Presley is singing 'Hound Dog' in Heaven. He is dead, cold as any stone. As devoid of life as the parrot in the Python sketch. If you or Gail or whoever can prove, scientifically or otherwise, that Elvis Presley is alive, I'll eat his blue suede shoes."

Now, if only more journalists could learn to shoot that straight!

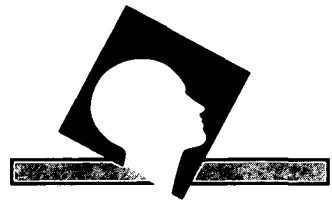
—*Lys Ann Shore*

No More 666s

It was announced on May 1 that the British vehicle licensing office will no longer issue license plates bearing the numbers "666." The Driver and Vehicle Licencing Agency (DVLC), which is responsible for the decision, said that cars with 666 plates were involved in too many accidents, and there were "complaints from the public." Reactions from clergymen were mixed.

—*Wendy M. Grossman*

Notes of a Fringe-Watcher



MARTIN GARDNER

Probability Paradoxes

The great controversy aroused by Marilyn vos Savant's several columns in *Parade* magazine about the problem posed by Monty Hall's three doors (*SI*, Summer 1991 and this issue) suggests that readers of *SI* may like to see this and similar problems discussed in more detail.

The three-door problem, in the form of three prisoners and a warden, was floating around anonymously among mathematicians in the mid-fifties. It is possible that I was the first to write about it, in my October 1959 Mathematical Games column in *Scientific American*. The column was later reprinted in *The Second Scientific American Book of Mathematical Puzzles and Diversions* (1961), currently available as a University of Chicago Press paperback.

Here is how I described the problem:

> Three men—A, B and C—were in separate cells under sentence of death when the governor decided to pardon one of them. He wrote their names on three slips of paper, shook the slips in a hat, drew out one of them and telephoned the warden, requesting that the name of the lucky man be kept secret for several days. Rumor of this reached prisoner A. When the warden made his morning rounds, A tried to persuade the warden to tell him who had been pardoned. The warden refused.
>
> "Then tell me," said A, "the name of one of the others who will be executed. If B is to be pardoned, give me C's name. If C is to be pardoned, give me B's name. And If I'm to be pardoned, flip a coin to decide whether to name B or C."
>
> "But if you see me flip the coin," replied the wary warden, "you'll know that you're the one pardoned. And if you see that I don't flip a coin, you'll know it's either you or the person I don't name."
>
> "Then don't tell me now," said A. "Tell me tomorrow morning."
>
> The warden, who knew nothing about probability theory, thought it over that night and decided that if he followed the procedure suggested by A, it would give A no help whatever in estimating his survival chances. So next morning he told A that B was going to be executed.
>
> After the warden left, A smiled to himself at the warden's stupidity. There were now only two equally probable elements in what mathematicians like to call the "sample space" of the problem. Either C would be pardoned or himself, so by all the laws of conditional probability, his chances of survival had gone up from 1/3 to 1/2.

The warden did not know that A could communicate with C, in an adjacent cell, by tapping in code on a water pipe. This A proceeded to do, explaining to C exactly what he had said to the warden and what the warden had said to him. C was equally overjoyed with the news because he figured, by the same reasoning used by A, that his own survival chances had also risen to 1/2.

Did the two men reason correctly? If not, how should each have calculated his chances of being pardoned?

The following month I answered like this:

The answer to the problem of the three prisoners is that A's chances of being pardoned are 1/3, and that C's chances are 2/3.

Regardless of who is pardoned, the warden can give A the name of a man, other than A, who will die. The warden's statement therefore has no influence on A's survival chances; they continue to be 1/3.

The situation is analogous to the following card game. Two black cards (representing death) and a red card (the pardon) are shuffled and dealt to three men: A, B, C (the prisoners). If a fourth person (the warden) peeks at all three cards, then turns over a black card belonging to either B or C, what is the probability that A's card is red? There is a temptation to suppose it is 1/2 because only two cards remain face-down, one of which is red. But since a black card can always be shown for B or C, turning it over provides no information of value in betting on the color of A's card.

This is easy to understand if we exaggerate the situation by letting death be represented by the ace of spaces in a full deck. The deck is spread, and A draws a card. His chance of avoiding death is 51/52. Suppose now that someone peeks at the cards, then turns face up 50 cards that do not include the ace of spades. Only two face-down cards are left, one of which must be the ace of spades, but this obviously does not lower A's chances to 1/2. It doesn't because it is always possible, if one looks at the faces of the 51 cards, to find 50 that do not include the ace of spades. Finding them and turning them face up, therefore, has no effect on A's chances. Of course if 50 cards are turned over at random, and none prove to be the ace of spades, then the chance that A drew the death card *does* rise to 1/2.

What about prisoner C? Since either A or C must die, their respective probabilities for survival must add up to 1. A's chances to live are 1/3; therefore C's chances must be 2/3. This can be confirmed by considering the four elements in our sample space, and their respective initial probabilities:

1. C is pardoned, warden names B (probability 1/3).
2. B is pardoned, warden names C (probability 1/3).
3. A is pardoned, warden names B (probability 1/6).
4. A is pardoned, warden names C (probability 1/6).

In cases 3 and 4, A lives, making his survival chances 1/3. Only cases 1 and 3 apply when it becomes known that B will die. The chances that it is case 1 are 1/3, or twice the chances (1/6) that it is case 3, so C's survival chances are two to one, or 2/3. In the card-game model this means that there is a probability of 2/3 that C's card is red.

It is obvious that this confusing problem is equivalent to Marilyn vos Savant's three-door puzzle. Let's model it as a three-shell game. You know that a pea is under just one shell, and you are told in advance—this is a crucial assumption—that after you choose a shell, the operator (who knows where the pea is) will turn over

an empty shell. Because he can *always* do this, it provides no new information about the pea's whereabouts. The probability you chose correctly remains 1/3 even though only two shells remain face down. The probability that the pea is under the other shell rises to 2/3 because the two probabilities must add to 1 (certainty). Your chances are therefore doubled if you switch your choice to the other shell. Of course if someone approaches the table without knowing what has gone on before, and is told only that the pea is under one of the two shells, the probability *for this person* is 50-50 for each shell.

An even simpler probability brainteaser, equally counterintuitive, is one I introduced in an April 1957 column, but discussed more fully in October 1959. You find yourself sitting next to a stranger on a plane. The following dialogue occurs:

You: "How many children do you have?"

She: "Two."

You: "Is at least one of them a boy?"

She: "Yes."

What is the probability that both are boys? One is tempted to say 1/2. If one child is a boy, it seems that the other child is either a boy or a girl with equal probability.

Surprisingly, this is incorrect. Assume that *if* there are two boys, they are not twins. Call the older boy B1 and the younger B2. There are three equally probable combinations that will meet the mother's statements: B1 and a girl, B2 and a girl, and B1 and B2. In only one case are both boys, so the chances both are boys is 1/3, not 1/2. If you now ask, "Is your *oldest* child a boy?" and she says yes, the equally probable cases reduce to B1 and a girl, and B1 and B2. The probability both children are

boys then rises to 1/2!

In my April 1957 column (reprinted in another University of Chicago Press paperback entitled *Hexaflexagons and Other Mathematical Diversions*) I gave a strongly counterintuitive problem that goes back at least to 1911. It is another marvelous example of how easily one's intuitions can be misled by seemingly trivial probability questions.

You are playing bridge. After the cards are dealt, you turn to Ms. Jones and ask, "Do you have at least one ace in your hand?" She truthfully answers yes. The probability she has at least one other ace is exactly 5359/14498, or .369+. This is a trifle more than 1/3. You then ask, "Do you have the ace of spades in your hand?" Again the answer is yes. What is now the probability she has at least one other ace? Incredibly, it rises to 11686/20825, or .561+, which is better than 1/2! How can naming an ace raise the probability of a second ace?

George Gamow and Marvin Stern, in their amusing little book *Puzzle-Math* (1958), showed how this can be understood by reducing the deck to just four cards: ace of spades, ace of hearts, two of clubs, and jack of diamonds. This "deck" is shuffled and dealt to two players. Ms. Jones's hand can be one of six that are equally possible: (AS, AH) (AS, JD) (AS, 2C) (AH, JD) (AH, 2C) (JD, 2C).

If you ask Ms. Jones if she has at least one ace, five of the hands allow her to say yes. Because only one has a second ace, the chances she holds two aces are 1/5. If you now ask, "Do you have the ace of spades?" three hands permit her to say yes, one of which has two aces. The probability of a second ace rises from 1/5 to 1/3.

There are scores of other paradoxes involving probability that are just as mind-bending. I close with one that eminent philosophers and statisticians are still debating. It was introduced by philosopher of science Carl Hempel, and is known as "Hempel's paradox." Hempel invented it to show how unclear our understanding is of what is meant by a "confirming instance" of a theory.

Consider the conjecture "All crows are black." Everyone agrees that each time you find another black crow it counts as a confirming instance—that is, increases the probability—of the truth of the assertion "All crows are black." Finding a white crow would be a disconfirming instance that would make the conjecture false.

Now consider the fact that the statement "All crows are black" is logically identical with the statement "All not-black objects are not crows." So—you start looking at objects that are not black. You come upon a green necktie. It clearly is not a crow, therefore it confirms the statement "All not-black objects are not crows." But if it confirms *that* statement, it follows with iron logic that a green necktie must be a confirming instance of "All crows are black"! This of course seems absurd. It suggests that a scientist can do ornithological research simply by looking around a room.

As rhymester Armand T. Ringer once put it:

> I never saw a purple cow,
> But if I ever see one,
> Will the probability crows are
> black
> Have a better chance to be 1?

You will understand why I cannot discuss this paradox further when I tell you that in my *Hexaflexagons* book I have a bibliography for this paradox that lists more than 60 references in books and journals where widely different views about this paradox are defended. ■

Psychic Vibrations

Creationists, Cosmologies, and Crashes

ROBERT SHEAFFER

If you recently heard a loud crashing noise, according to some people it just might have been the collapse of the Big Bang. No less an authority than the Institute for Creation Research recently proclaimed, "Big Bang Theory Collapses" (*Impact*, June 1991). Citing a number of articles in the popular press with titles like "Big Bang Theory Goes Kerplooey," Duane Gish, Vice President of the ICR, observes that "the Big Bang theory has received one body blow after another" in the past two or three years. The straw said to have broken the camel's back was the research of Will Saunders and nine colleagues, based on data from the Infrared Astronomical Satellite, reported in January 1991. According to the ICR, Saunders reported finding "a far greater number of massive superclusters than can be accounted for by Big Bang cosmologies." Gish gloats that while the universe did not *begin* with a bang, we can rely that it will certainly *end* with one: "The heavens shall pass away with a great noise, and the elements shall melt with fervent heat," as predicted in 2 Peter 3:10, a book whose authenticity was disputed by the Church Father Eusebius more than 17 centuries ago, and is today by nearly all serious biblical scholars.

Looking at these same popular articles, *Sky and Telescope* magazine (May 1991, p. 467) reached a very different conclusion: "Had the foundation of modern cosmology really crumbled overnight? . . . Not at all. . . . What happened was that a handful of science reporters mistook theories of galaxy formation in the early universe for the Big Bang itself, which happened aeons earlier. . . . Some in the news media apparently took this to imply that the entire Big Bang cosmology was out of the window."

Elsewhere on the creation front, Victor Bernard, in "Then a Miracle Occurs" (*Free Inquiry*, Summer 1991, p. 35), reports on what is perhaps the most advanced creationist research

paper yet: "A Three-Dimensional Simulation of the Global Tectonic Changes During Noah's Flood," by John R. Baumgardner, who, unlike most creationists, has solid scientific credentials. Baumgardner hypothesizes a sudden subduction of all the earth's ocean floor, causing steam that would generate intense global rain for 40 days and 40 nights and resulting in a sudden and temporary rise in sea level from 1,200 to 1,800 meters. The principal problem in this scenario is that he somehow must invent a mechanism for reducing the viscosity of the earth's magma by some nine orders of magnitude, which in layman's terms means that the earth's interior suddenly went from the solidity of rock to somewhat less than that of jello. But I am confident that, given enough time, his inventiveness will rise to the task and provide what he needs.

* * *

The UFO front has been so quiet that UFOlogists seem to have nothing better to do than to argue over rival re-hashes of 40-year-old crashed-saucer yarns. However, the careful observer detects a lot of rustling in the underbrush. Howard Menger, a classic saucer "contactee" of the 1950s, reports from his workshop in Vero Beach, Florida, that he has just recently succeeded in getting a 4-foot-diameter flying saucer of his own design off the ground. He claims it operates on a new "electro-aerodynamic" principle, which will certainly make him rich and famous if he is telling the truth. Bill Cooper, whose current UFO theory is that the U.S. government has, for sinister reasons, created a bizarre conspiracy to convince us that space aliens *really do* exist, has just published a new book, *Behold a Pale Horse*, containing the text of something calling itself the "Protocols of the Wise Men of Zion." UFOlogist James Moseley compared this text with that of the notorious anti-Semitic hoax, "Protocols of the Elders of Zion," and found them to be identical. Cooper insists that the document he published actually describes a plot not by Jews, but by "the Illuminati." And Bigfootologist Erik Beckjord recently gained the attention of the press by claiming to have discovered a new "face on Mars" that looks like Senator Ted Kennedy. (Perhaps the Martians are sculpting their own version of Mt. Rushmore.) Beckjord also claims to to have been zapped by a UFO, which left him with a red face and persistent headaches, emphasizing that these were "*not* from drinking."

* * *

At the time of this writing, it's already shaping up as an unusually bad year for "psychic" predictions. (Come to think of it, the "psychic" prognosticators haven't had a good one yet!) Among the dramatic predictions for

1991 from well-known "psychics" we can already write off are:

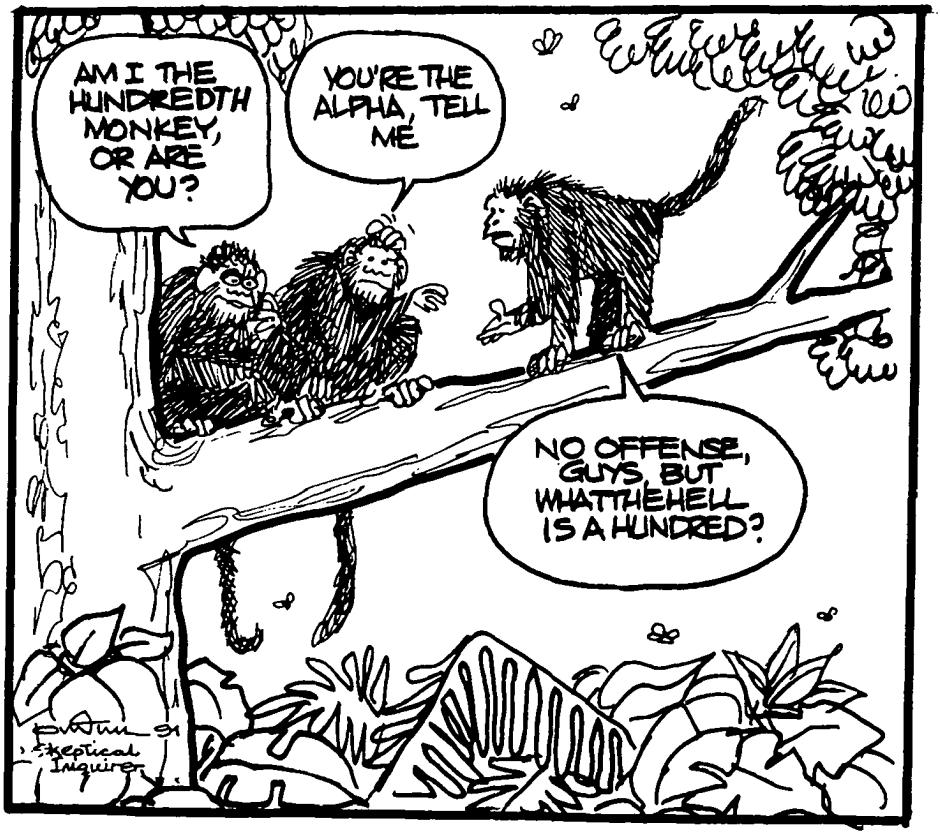
Judy Hevenly: "Saddam Hussein will be killed in February in an accidental nuclear explosion at a secret Iraqi installation."

Marie Graciette: "A massive earthquake will strike the Grand Canyon in the spring."

Lou Wright: "An air disaster will kill hundreds of vacationers on the way to Hawaii in March."

There are plenty of other equally implausible prognostications; but since the meter is still running, we must wait until the year's end. ■

OUT THERE Rob Pudim


AM I THE HUNDREDTH MONKEY, OR ARE YOU?
YOU'RE THE ALPHA, TELL ME
NO OFFENSE, GUYS, BUT WHATTHEHELL IS A HUNDRED?
Skeptical Inquirer

The Crop-Circle Phenomenon

An Investigative Report

JOE NICKELL and JOHN F. FISCHER

For years a mysterious phenomenon has been plaguing southern English crop fields. Typically producing swirled, circular depressions in cereal crops, it has left in its wake beleaguered farmers and an astonished populace—not to mention befuddled scientists and would-be "investigators"—all struggling to keep apace with the proliferating occurrences and the equally proliferating claims made about them.

The defining characteristics of the phenomenon lead in a fairly straight line toward the hoax hypothesis.

The Mystery and the Controversy

The circles range in diameter from as small as 3 meters (nearly 10 feet) to some 25 meters (approximately 82 feet) or more. In addition to the simple circles that were first reported, there have appeared circles in formations; circles with rings, spurs, and other appurtenances; and yet more complex forms, including "pictographs" and even a crop triangle! While the common depression or "lay" pattern is spiral (either clockwise or counterclockwise), there are radial and even more complex lays (Delgado and Andrews 1989; Meaden 1989; "Field" 1990).

The year 1989 brought no fewer than three books on the cornfield phenomenon and added to the already countless articles on the subject. Soon circles-mystery enthusiasts were being called cereologists (after Ceres, the Roman goddess of vegetation). Circlemania was in full bloom.

By this time, some of the nascent explanations for the early, relatively simple circles had

This article is a greatly abridged version of a chapter in the authors' forthcoming book, *Mysterious Realms.*

been debunked. The circles' matted pinwheel patterns readily distinguished them from fairy rings (rings of lush growth in lawns and meadows, caused by parasitic fungi) (Delgado and Andrews 1989). The possibility that they were due to the sweeping movements of snared or tethered animals, or rutting deer, seemed precluded by the absence of any tracks or trails of bent or broken stems. And the postulation of helicopters flying upside-down was countered by the observation that such antics would produce, not swirled circles, but crashed 'copters ("England" 1989; Grossman 1990).

A "scientific" explanation was soon attempted by George Terence Meaden, a onetime professor of physics who later took up meteorology as an avocation. In his book, *The Circles Effect and Its Mysteries*, he claims: "Ultimately, it is going to be the theoretical atmospheric physicist who will successfully minister the full and correct answers." Meaden's notion is that the "circles effect" is produced by what he terms the "plasma vortex phenomenon." He defines this as "a spinning mass of air which has accumulated a significant fraction of electrically charged matter." Most evidence, he contends, "suggests that the spinning wind has entered the ionized state known as plasma, and that the vortices are to become plasma balls akin to ball lightning in appearance except that they are much bigger and longer-lived." When the electrically charged, spinning mass strikes a crop field, Meaden thinks, it produces a neat crop circle (1989: 3, 10-11).

Variant forms, he contends, are also allowed by his postulated vortices.

A "double pictogram" that appeared in East Kennett, England. (Photo by Busty Taylor/Centre for Crop Circle Studies.)

For example, of satellite circles Meaden states: "An induction effect may be the consequence of electromagnetic-wave interference resulting in antimodal extrema at the satellite positions, thus leading to secondary rotating plasmas at these locations." Because of their capacity to be ionized, Meaden asserts, the vortices can produce light and sound effects that have been associated with the creation of some circles (Meaden 1989: 60-66).

However, as even one of Meaden's staunchest defenders concedes, "Natural descending vortices . . . are as yet unrecognized by meteorologists" (Fuller 1988). Meaden himself acknowledges that "some from among my professional colleagues who have expressed surprise at the discovery of the circles effect and questioned why it has not previously attracted the attention of scientists, prefer to deny its existence and reject the entire affair as a skillful hoax" (Meaden 1989:15).

In contrast to Meaden's approach is that of Pat Delgado and Colin Andrews (1989), two engineers who have extensively studied and recorded the crop-circle phenomenon. The pages of their *Circular Evidence* are filled with digressions and irrelevancies—all calculated to foster mystery. For example, we learn of the authors' meeting with a professor and a member of the British Society for Psychical Research, "a meeting," say the authors knowingly, "which we recorded, although the tape was blank when we played it back." A dog that became ill at one site, "some kind of magnetic disturbance" at another, and a plane that crashed after flying over a field where crop circles had appeared some eight weeks before—these are the apparently random occurrences that Delgado and Andrews (1989: 60, 65, 74, 104) attempt to yoke into the mystery.

Overall, Delgado and Andrews hint most strongly at the UFO hypothesis—perhaps not surprisingly, since both have been consultants to *Flying Saucer Review* (Grossman 1990). Although they profess "guarded views" about whether circles and rings have an extraterrestrial source, they frequently give the opposite impression. For example, they go out of their way to observe that a 1976 circle "appeared about seven weeks before a Mrs. [Joyce] Bowles had seen a UFO [and a silver-suited humanoid] just down the road." Again, after visiting one circle Andrews met two teenagers, one of whom had earlier seen "an orange glowing object" nearby. Other mysterious lights and objects are frequently alluded to (Delgado and Andrews 1989: 17, 63, 98).

They rely heavily on anecdotal evidence (i.e., evidence in the form of personal stories, such as the "eyewitness" tales that supposedly prove Elvis Presley still lives). In this respect, it seems that both Meaden and the Delgado and Andrews team have much in common. For example, Meaden offers three alleged eyewitnesses (one an associate of Meaden) to the vortex creation of a circle. Unfortunately, all waited several years before making their claims, and none described the respective events in quite the same way (Meaden 1989: 26-28). Similarly, Delgado and Andrews (1989: 68) associate UFO sightings with circle formation, such as the night "a row of bright lights" was seen at the famous Devil's Punch Bowl at Cheesefoot Head, Hampshire. Use of such conflicting anecdotal evidence prompted one writer to state, rather cynically: "As long as the phenomenon continues, time is on the side of the believers, of course. More and more witnesses, with tales that conform to the dominant myth, will certainly come forward. The witness battalion has already grown since the

books appeared" (Shoemaker 1990). Almost predictably, a *hybrid* of the main theories has appeared in "eye-witness" form. Late one evening in early August 1989, or so they claimed, two young men witnessed a circle being formed near Margate, Kent. One of them, a 19-year-old, described "a spiraling vortex of flashing light" (a nod to Meaden et al.), which, however, "looked like an upturned satellite TV dish with lots of flashing lights" (a sop to flying-saucer theorists). The youth kept a straight face while posing with the circle for a news photo ("A Witness" 1989-90).

As the crop-circle phenomenon entered the decade of the nineties—bringing with it the emergence of ever more complex forms that earned the sobriquet "pictograms"—the main circular theorists rushed into print their various "Son of Crop Circles" sequels. For example, Paul Fuller and Jenny Randles (who are Meaden's disciples, although, ironically, they are UFOlogists) followed their *Controversy of the Circles* with *Crop Circles: A Mystery Solved*. Several periodicals devoted to the phenomenon also sprang up, such as *The Cereologist*, *The Crop Watcher*, and *The Circular*, which was published by the Centre for Crop Circle Studies (Chorost 1991).

If critics of the main theories were not capitalizing on an expanding market of interest in crop circles, they were nevertheless busily poring over the data and pointing out that the prevailing circle theories were, well, full of holes. We were among them.

Data Analyses

Our interest in the swirled-crops phenomenon increased during the latter 1980s. We had already opened a file on the subject, but now we sought to gather information at an accelerated pace. As we studied the incoming data and photographs, we began to formulate hypotheses and to seek out the opinions of agronomists and others who might be helpful. We also enlisted the aid of a computer expert to help us compile and analyze data on the swirled crops—a phenomenon we naturally distinguished from the simple circles or rings that may result from a number of causes (Delgado and Andrews 1989: 160-165).

It soon struck us (as it had many other observers) that the crop-circle phenomenon had a number of potentially revealing characteristics. Cereologists—whether of the "scientific" or "paranormal" stripe—tend either to deny these characteristics or to posit alternative explanations for them. For the implications are serious. While any *single* attribute may be insufficient to identify a phenomenon, since other phenomena may share that feature, sufficient *multiple* qualities may allow one to rule in or out certain hypotheses so as to make an identification.

The identification we allude to is hoaxing. The characteristics that point to it include an escalation in frequency, the geographic distribution, an increase in complexity over time, and what we call the "shyness effect," as well as a number of lesser features.

An Escalation in Frequency. This aspect of the phenomenon has been well reported. Although there have been reports of circles and rings in earlier years and in various countries—e.g., circles of reeds in Australia in 1966 and a burned circle of grass in Connecticut in 1970—only a few had the flattened swirl feature, and not many of those were well documented at the time (Delgado and Andrews 1989: 179-189; Story 1980: 370-371).

In any case, by the mid 1970s, what are now regarded as "classic" crop

circles had begun to appear. In 1976, swirled circles in tall grass were shown near a Swiss village by a man who claimed he was regularly visited by extraterrestrials (Kinder 1987), and Delgado and Andrews (1989) claim an instance in England that same year. When Delgado saw his first circles in 1981, his response was "to share the experience with other people, so I contacted several national papers, along with the BBC and ITN." Then, he says, "Local papers jumped on the bandwagon as soon as they could get the story into print" (Delgado and Andrews 1989: 11-17).

Delgado's use of the word *bandwagon* seems appropriate, since the term refers to an increasingly popular trend or fad. According to Noyes (1989) in an article titled "Circular Arguments," the crop-circles phenomenon "gives the appearance of elaborating and increasing its intrusions from year to year." Writing in 1989, he said that year had "brought more occurrences than ever before."

It was in an attempt to quantify and assess such perceptions that we decided to create a data bank of information on the circles. We used the data in Delgado and Andrews's *Circular Evidence*, which reviewers praised over Meaden's and Fuller and Randles's books for its "level of detail" (Shoemaker 1990) and its being "more comprehensive" (Michell 1989). "Over the years," John Michell (1989) says Delgado and Andrews "have inspected, measured, photographed, mapped and annotated hundreds of circles. . . ." Of course we considered that the incidences of the phenomenon in their book did not represent a complete list, but we intended to look at other sources of data as a cross-check on the sample.

With these caveats in mind we gave a copy of *Circular Evidence* to computer expert Dennis Pearce, an advisory engineer with Lexmark International. Plotting the number of circles per year, Pearce determined, showed a definite (i.e., significantly greater than exponential) increase in the number of crop circles annually from 1981-1987 (Pearce 1991).

This was well supported by data from Meaden's (1989-90) article in *Fortean Times*, "A Note on Observed Frequencies of Occurrence of Circles in British Cornfields." Figures for the four years from 1980 to 1983 were, respectively, 3, 3, 5, and 22; Meaden (1989-90) does not give exact figures for the next few years, but notes they were "rising"; then during the years from 1987 to 1989 the totals went from 73 to 113 to "over 250" annually. For 1990, the figure had again jumped remarkably—to 700 circles in Britain, at least according to Randles (1991a). Small wonder that even moderate voices in the controversy—like Noyes and Michell—insisted the phenomenon was increasing.

However, Meaden and his followers do not accept that there has actually been such a marked increase over the decade. Meaden (1989-90) attributes the increase in part to aerial surveillance begun in 1985. "In addition," he says, "totals for earlier years were still rising, partly as a result of feedback from helpful farmers who were telling us of occurrences of circles on their land which they had known about when they were young." But such anecdotal reports are untrustworthy in the extreme for reasons we have already considered—not the least of which is that we cannot at such a remove distinguish the "classic" phenomenon from other circles and rings.

Meaden mentions even an instance that supposedly occurred in 1678! Widely cited, it is the folk account of an alleged instance of witchcraft in Hertfordshire. Unfortunately for

cereologists, the account specifically states that the oats were *cut*, not bent down in a swirled pattern like the crop circles. Indeed, not only does this story of "The Mowing Devil" (1989-90) fail to support an early historical existence for crop circles, but, says one critic, "the phenomenon's general, if not total, lack of historical precedent is to me its most disturbing aspect" (Shoemaker 1990). Jenny Randles largely agrees with Meaden, although she now increasingly allows for a great number of hoaxes. Speaking of the proliferation of circles that occurred in 1989 and 1990, she states:

> Both those years are hopelessly tainted by the social factors [i.e., the bandwagon effect we mentioned earlier] generated from the huge media hype. Before 1989 we were getting maybe 30 press stories a summer on circles. In 1989 we got up to 300 and in 1990 we had almost 1,000. We can show that this escalation in publicity *preceded* the increase in circle totals and to us this strongly implies a correlation.

In short, she says, the number of circles has been swelled, "heavily contaminated by mass hoaxing inspired by all the publicity" (Randles 1991b).

Here Randles is helping skeptics make their case, because if there is indeed "mass hoaxing," might not the entire phenomenon be similarly caused? We agree with Randles that the escalation of the phenomenon seems to correlate with media coverage of it and that the coverage helped prompt further hoaxes. We provided Dennis Pearce with statistics on crop-circle articles that appeared in the London *Times* from 1986 to 1990, and he specifically commented on "the rapid rise in both locations and number of circles in the years following the London *Times* reports," which, he said, "is to me evidence of human intervention."

Geographic Distribution. A second observed feature of the patterned-crops phenomenon is its predilection for a limited geographic area. As we have seen, prior to the mid-1970s crop circles appeared sporadically at scattered locations in various countries, but since then they have flourished in southern England—in Hampshire, Wiltshire, and nearby counties. It was there that the circles effect captured the world's attention.

In plotting the occurrences of formations among English counties, Pearce confessed that he was "surprised at how localized the phenomenon is." Although there are known exceptions, such as an occurrence in adjacent Wiltshire in 1980, all the pre-1986 cases published by Delgado and Andrews in *Circular Evidence* were in Hampshire, with the vast majority remaining there during the period surveyed (Pearce 1991).

Other sources provide additional evidence for this geographic preference. In 1989 *Time* magazine concluded: "While there have been reports of circles from as far away as the Soviet Union, Japan, and New Zealand, by far the greatest number have appeared in Hampshire and Wiltshire" (Donnelly 1989). The Associated Press, citing a total of 270 circles for the summer of 1989, reported that "two-thirds appeared in a square-mile zone near Avebury in Wiltshire's rural terrain, including 28 in one field" ("England" 1989).

Jenny Randles and Paul Fuller (1990:50) argue that, to the contrary, "sensible circle researchers have known for some years that circles appear all over Britain, but for various reasons formations appearing away from this area receive little publicity

and go unreported outside their local media." But, as Ralph Noyes (1989) counters, many of the reports Randles and Fuller cite are "poorly documented"; he adds that "if credit is given to them all, however, there still remains a strong appearance of an overwhelming concentration of events in Wessex [an area in southern England, named after the old Anglo-Saxon kingdom] and of a phenomenon which has developed explosively in the 1980's."

It may not be coincidence, given the early sporadic circles' association with UFOs, that the clustering occurs where it does. The Wiltshire town of Warminster is "the famous UFO capital of England" (Michell *1989-90*); during the sixties and seventies it was what Randles and Fuller term "the centre of the UFO universe, drawing spotters from all over the world." Therefore, the area may have provided a unique climate for hoaxes—in the form of UFO-landing sites (as the early Wessex circles were often thought to be)—to flourish.

Some cereologists suggest that, within the densely circle-pocked area, the configurations do have a peculiarity of distribution. Wind-vortex theorists, like Meaden and Fuller (1988), insist that a high proportion of crop circles—some 50 percent—appear at the base of hills, a fact they attribute to the topography's transforming air currents into vortices. However, Delgado and Andrews (1989) observe that the circles form in a variety of locations—"many . . . remote from any hills." On the other hand, it is obvious to skeptics that hills offer good vantage points for hoaxers to view their creations.

Looking beyond the Wessex area, just as the popular media's increasing reportage of the cornfield phenomenon appears to have produced an increase in circle totals—as even Jenny Randles concedes—it also correlates well with the spread of the phenomenon elsewhere. In view of just the data in *Circular Evidence*, Dennis Pearce observed that the number of reported geographical locations in England each year grew at a faster than exponential rate. "I would suspect," he said, "that a natural phenomenon would be either consistently localized or consistently spread about, but not spreading rapidly over time." Also, whereas the circles' pre-English distribution was exceedingly sparse, after newspaper and television reports on the phenomenon began to increase in the latter eighties circles began to crop up in significant numbers around the world. For example, in September 1990 two circles appeared in a Missouri sorghum field and were immediately followed by reports in three other fields—one in Missouri and two in Kansas (McGuire and Adler 1990).

About this time they also had begun to appear in significant numbers in Japan and Canada. Although circles had been reported in Canada sporadically since the mid-1970s, they reappeared with a vengeance in the fall of 1990. Soon after circles turned up in Manitoba in August, the *Toronto Globe and Mail* reported they were "appearing almost weekly now across the Prairies" ("Rings" 1990).

Increase in Complexity. A third characteristic of the patterned-crops phenomenon is the tendency of the configurations to become increasingly elaborate over time. Looking first just at the data in *Circular Evidence*, we see a definite trend. Delgado and Andrews (1989) themselves state: "Before the late 1970s it looked as though single circles were all we had to consider; but, as has always been the pattern, and as we have learnt over the years, something, maybe some intelligent

level, keeps one or more jumps ahead. . . ." (p. 122). Again they say: "As soon as we think we have solved one peculiarity, the next circle displays an inexplicable variation, as if to say, 'What do you make of it now?' " (p. 12).

A case in point involves Terence Meaden. When he first published *The Circles Effect and Its Mysteries* in mid-June 1989, setting forth his wind-vortex theory, he declared that "single rings around single circles always rotate in a sense opposite to that of the interior," and he explained that this was necessarily the case (p. 96). Yet no sooner had his book been published than a circle appeared with a ring swirled in the same direction (Michell 1989-90)!

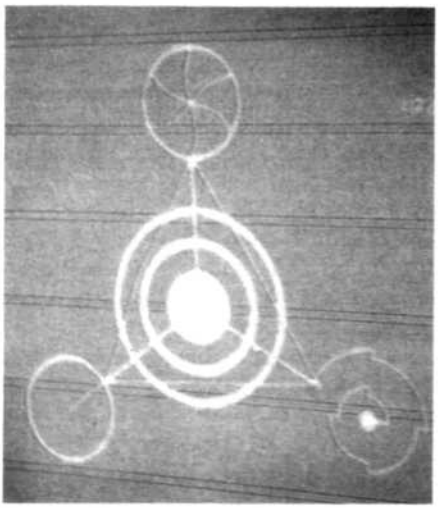
Still, Meaden has clung stubbornly to his vortex theory. He merely acknowledges "the amazing discoveries of recent years" and speaks of the "difficulties of interpretation," concluding:

> Much of the supposed "evolution" of the phenomenon—to which some have even ascribed "intelligence"—can therefore be explained rationally by an insufficiency of data. The more complete the archive becomes, the better this will be appreciated. (Meaden, in Noyes 1990:76, 85)

To a degree, Meaden is correct; there were some moderately complex forms in earlier periods. But the overall evolution of forms *within the Wessex area* still seems well established, and—worldwide—the emergence of the pictograms in 1990 clearly represented a new phase. States Meaden: "Admittedly, 1990 does look to be exceptional, but just because the reasons for this wait to be clarified, it would be fatuous to decree [that] an alien intelligence is at hand" (Meaden, in Noyes 1989: 85).

The pictograms are wildly elaborate forms with a distinctly pictorial appearance. There have been circles with key shapes and clawlike patterns; complex designs, consisting of circles and rings linked by straight bars and having various appendages and other stylized features; and still other configurations, including free-form "tadpole" shapes and even a crop *triangle* ("Field" 1990; Noyes 1990). Small wonder that Delgado and Andrews, as well as others, suspect that the force that is making the designs is being "intelligently manipulated" ("Mystery" 1990).

But few would have underestimated the cereologists' will to believe had they known of the crop-*message* incident of 1987. The message, written in the typical flattened-crops style and with the words all run together, read: "WEARENOTALONE." Delgado told readers of *Flying Saucer Review:* "At first sight it was an obvious hoax, but prolonged study makes me wonder." Of the crop circles, he said: "Maybe these circles are created by alien beings using a force-field unknown to us. They may be manip-



This July 1991 pictogram at Barbury Castle is an example of the increasing complexity of the design of crop circles. (Photo by Busty Taylor/ Centre for Crop Circle Studies.)

ulating existing Earth energy" (quoted in Randles and Fuller 1990: 18-19). Or the beings may be terrestrial ones, laboring by the sweat of their brows. At least the pictograms enabled Jenny Randles to wake up to the unmistakable evidence that hoaxes were not only occurring but were running rampant. She has admitted (1991a):

> I do not believe that wind vortices created the pictograms, though serious research into that possibility continues. . . . I can think of very good reasons why the pictograms might well be expected, based on our sure knowledge that crop-circle hoaxing was greatly increased from just a few known cases before 1989 to a far higher figure deduced from my own personal site investigations in 1990. I would put the hoaxes to comprise something over 50 percent of the total.

However, Randles still believes that beyond the hoaxes is a genuine, wind-vortex-caused phenomenon, whereas there seems no need to postulate such. If the "experts" like Meaden, Delgado, and Andrews cannot tell the genuine crop circles from hoaxed ones in 50 percent of the cases, one wonders just what the other 50 percent consist of.

Two other aspects of the patterns' complexity are revealing. The first concerns the lay patterns, which, like the configurations themselves, evolved in complexity. Whereas "the swirl lays of previous years had been orderly and depressed neatly," say Delgado and Andrews (1989), 1987 produced more diverse and far more complex lay patterns (p. 126). They were even more elaborate in 1989 (Noyes 1990: 91).

Then there are the crop designs that have been formed in *stages*—not as single vortex strikes or other brief events. For example, a giant three-ringed circle, with satellites, that was photographed on May 19, 1990, was photographed again on May 27, whereupon it had developed an additional outer ring and ten more satellites (Noyes 1990-93). Surely such work-in-progress seems like nothing so much as the effort of industrious hoaxers.

The Shyness Factor. A fourth characteristic of the patterned-crop phenomenon is its avoidance of being observed in action. There is considerable evidence of this fact.

First, there is its nocturnal aspect. Delgado and Andrews (1989:156)—who appear to have done the most extensive documentation of the phenomenon—state:

> Many . . . confirmations of nighttime creations come from farmers and people living near circle sites. "It wasn't there last night, but I noticed it first thing this morning" has become almost a stock statement. The evidence is overwhelming that circle creations only occur at night.

Randles and Fuller (1990:53) agree that "most seem to form during the night or in daylight hours around dawn." However, they insist that "several circles are known to have appeared during daylight," although they do not explain. If they are referring to alleged eyewitness accounts of vortex-formed circles, or other anecdotal evidence, they simply fail to make a case. Besides, this concession that the circles phenomenon is *largely* nocturnal is important since that characteristic seems to run counter to the wind-vortex theory.

Not only does the circle-forming mechanism seem to prefer the dark, but it appears to specifically resist being seen, as shown by Colin Andrews's Operation White Crow. This was an eight-night vigil main-

tained by about 60 cereologists at Cheesefoot Head (a prime circles location) beginning June 12, 1989. Not only did the phenomenon fail to manifest itself in the field under surveillance, but—although there had already been almost a hundred formations that summer, with yet another 170 or so to occur—*not a single circle was reported for the eight-day period anywhere in England!* Then a large circle and ring (the very set that, being swirled in the same direction, seemed to play a joke on Meaden by upsetting his hypothesis) was discovered about 500 yards away *on the very next day!* (Noyes 1990:28; Michell 1989-90: 47-58)

The following year, the cereologists attempted to profit from their mistakes. This time they conducted a "top secret" operation termed Operation Blackbird, which lasted three weeks beginning on July 23, 1990. They took $2 million worth of technical equipment—including infrared night-viewing camera equipment—to an isolated site where they maintained a nighttime vigil. Reuters quoted the irrepressible Colin Andrews as explaining what happened in the early morning hours: "We had many lights, following that a whole complex arrangement of lights doing all sorts of funny things. It's a complex situation. . . . But there is undoubtedly something here for science" (L. Johnson 1991). Pressed by reporters, Andrews denied that his group could have been fooled by a hoax. However, when they and reporters converged on the site they discovered a hastily flattened set of six circles, with a wooden cross and a Ouija board placed at the center of each.

Other Characteristics. Additional features of the "circles effect" are varied and revealing. Although Ralph Noyes insists that "hoax, as a general theory can be consigned to the dustbin of 'explanationism,' " he notes an interesting apparent characteristic of the phenonemon. This is the way an elaborate feature, a segmented-lay pattern, seemed to have been anticipated a few weeks before: In a nearby field had appeared, says Noyes (1990:30), "what seems to be the first rough sketch of it." He asks, "Was something *practicing* on that earlier occasion?"

The "something" apparently uses a variety of techniques in doing its sketching and drawing. This is evident not only in the general variety of lay patterns (swirl, radial, etc.), but also in specific details. For example, Delgado and Andrews (1989:139) explain that one circle "looks as though the floor was first swept around counterclockwise, then the edge was finished off with a thin circular stroke in the opposite direction." Another circle is notable for "serration marks" found on a few stems and leaves (p. 51); another (p. 142) shows a tightly wound center (as if the stems were wound about a post that was then removed); and so on.

We have already indicated the phenomenon's seeming propensity for mischief. As cereologist Archie E. Roy states (in Noyes 1990:12), "The phenomenon begins to have the look of a large-scale jokester who is leading us by the nose." John Michell (1989-90) mentions the "perversity" of the phenomenon in producing new patterns that invalidate previous hypotheses. And Hilary Evans (in Noyes 1990:41) observes that "whoever/whatever is responsible for the crop circles shows every sign of playing games with us."

The Hoax Hypothesis

We believe that, taken together, the characteristics we have described—

the escalation in frequency, the geographic distribution, the increase in complexity, the "shyness effect," and other features—are entirely consistent with the work of hoaxers.

That there *are* hoaxed crop circles no one can deny; the question is of the extent of the hoaxing—that is, whether, if all the hoaxes were eliminated, there would still be a residue of genuine circles that would require postulating some hitherto unproved phenomenon, such as wind vortices or extraterrestrial visitations.

We have seen that some of the cereologists' evidence—the alleged eyewitness accounts, the supposed correlation of circle sites with hilly terrain, and some other claims—is at best unproved and unconvincing. But there are additional assertions.

One claim is that tests of grain from crop circles showed a significant difference in "energy levels" from that in non-crop-circle areas. In fact, a prominent cereologist, the Earl of Haddington, submitted "blind" samples for testing to the Spagyrik Laboratory after receiving confirmation from its director that it could indeed detect the different "energy levels." But in a letter to *The Cereologist* Haddington reported: "Days, weeks passed, months passed, with phone calls at regular intervals always given the same reply. "We will put it [the report of the results] in the post tomorrow." After six months Haddington (1991) concluded: "When they are not told which sample came from a Crop Circle and which from a heap of grain in my back yard they are either unable or unwilling to give a result." (Other claims of differences in "energy levels" come from the many cereologists who employ dowsing or "witching" wands and pendulums to detect the mystical forces. Needless to say, such claims remain unproved.)

Many alleged characteristics of the circles are disputed. Is the phenomenon "silent," as some claim, or sometimes accompanied by a "humming or chirping" sound, which does not appear to be very consistent and might be almost anything? Again, consider the row of "detached" and "dancing" lights seen on the same night a circle was formed: Did they indeed represent a UFO "above the trees" or could they have been a line of hoaxers with flashlights on a distant slope? (Michell, in Noyes 1990:45; Delgado and Andrews 1989: 68)

If the cereologists cannot offer much in the way of positive evidence, they nevertheless make several negative claims, notably that hoaxers cannot produce circles with the qualities of the "genuine" ones. But what are these qualities? When one of us (JN) debated Delgado on a Denver radio program, it was difficult to get a straight answer from him on this issue.

Delgado's main argument was the alleged lack of broken-stemmed plants in the "genuine" formations, a point he and Andrews make repeatedly in *Circular Evidence*. For example, they say of one circle that "the root end of each stem is bent over and pressed down hard with no damage to the plants, which is why they continued to grow and ripen horizontally" (p. 138).

In response, his various equivocations were pointed out: e.g., in one instance "most" of the plants were undamaged (or rather unbroken; some had "serration" marks on them!) (p. 51). His contradictions were also noted. For instance, Andrews states of one crop ring: "Between the two radial splays was a line of buckled plants. Each one was broken at the knuckle along its stem length." Did he regard the formation as a hoax? No. He only said, as mysteriously as possible, "These collapsed plants

appeared to have suffered whiplash damage, possibly caused by opposing forces meeting" (pp. 63-64). In other words, if the plants are unbroken, that is a mystery; if broken, that is another mystery.

It is entirely possible that the circles with broken plants are merely the less skillfully hoaxed ones. We also considered that the moistening effect of dew on plants bent at night might mitigate against breakage, while agronomists we talked with pointed out that from mid-May to early August the English wheat was green and could easily be bent over without breaking—indeed, could only be broken with difficulty (Blitzer 1990; Daugherty 1990).

Another supposed impossibility is for hoaxers to produce circles without leaving tracks—there allegedly being none in the case of "genuine" circles. But a study of numerous crop-circle photographs in the various publications reveals that virtually every circle would have been accessible by the tractor "tramlines" that mark the fields in closely spaced, parallel rows. In any case, one can carefully pick one's way through a field without leaving apparent tracks.

Can cereologists really tell a hoaxed circle from a "genuine" one? Randles and Fuller (1990:72) provide a chart of features that supposedly differentiate one from the other. But Randles's belief that the pictograms are not authentic, when Fuller and others think otherwise, suggests that there is little objective basis for making a judgment. Says Dennis Stacy (1991), writing in the *MUFON UFO Journal*, "Most times, we're simply left to take the investigator's word for it, as if some sort of inherited sixth sense were at work."

In fact, rushing to judgment seems a habit of certain cereologists. When 98 circles appeared atop two hills in Wales in less than a week, Colin Andrews was described as spokesman for a "team of top scientists" who were going to investigate. Andrews asserted: "We believe we have something of major proportions. . . . Because of the scale of the formations, we are sure there is no human involvement." Alas, a follow-up report stated: "Red-faced scientists who investigated the 98 mystery circles in the Black Mountains of Wales have discovered they were made by a local farmer—to encouage grouse to settle" (quoted in Randles and Fuller 1990:97).

In what amounted to a test of his ability, Colin Andrews was asked by a BBC film crew to examine a circle they said they had found. Reportedly, upon visiting the pattern Andrews declared it genuine, but when the BBC explained that it was a hoaxed circle made especially for the occasion, he decided that the circle looked "too perfect" to be genuine after all (Sullivan 1991).

In several cases hoaxers have come forth and confessed, although often the reaction of cereologists is to doubt them. But Jenny Randles and Paul Fuller give credence to the claim of four farmhands from Cornwall that they had created the second 1986 circle-and-ring formation at Cheesefoot Head—one accepted as genuine by Delgado and Andrews (Randles and Fuller 1990: 64-65, 69).

Since we do not have definite knowledge of how particular "genuine" circles were made, the claim that hoaxers cannot have made them is a logical fallacy known as an argument *ad ignorantiam*. As observers like Dennis Stacy (1991) point out, it is now clear that crop cricles are comparatively easy to hoax. In fact, the different lay patterns and other details discussed earlier suggest there are various ways of making circles, and

indeed various techniques have been described in newspaper articles and books and even detailed by the hoaxers themselves.

An effective method was filmed by the BBC and has impressed those who have seen it. The BBC brought in "a young farmers' tug-of-war team," with the announcer sagely noting that they looked surprisingly practiced as they made their way down the tracks left by the sprayers [i.e., down the tramlines] to the spot we'd chosen." Using a rope to establish a radius, they linked arms, tramped around, and in no time at all had produced what appeared to be a fine circle, which one of them finished off by careful grooming on hands and knees. The announcer commented: "It was roughly at this point that serious doubts crept in and all sorts of little green men were replaced by images of large ruddy ones."

Challenged by the announcer, "Looks as if you'd done it before," the members of the team exchanged grins and knowing looks. Finally, one said, "Well, that would be telling. It's a trade secret. I wouldn't like to say. I think many farmers in Hampshire would be knocking on our doors."

More recently, in September 1991, two "jovial con men in their sixties" claimed they had been responsible for many of the giant wheat-field patterns made over the years. In support of their claim, they fooled Delgado, who declared a pattern they had produced for the tabloid *Today* to be authentic; he said it was of a type no hoaxer could have made. The men said their equipment consisted of "two wooden boards, a piece of string and a bizarre sighting device attached to a baseball cap" (Schmidt 1991). They demonstrated the technique for television crews, e.g., on ABC-TV's "Good Morning America," September 10, 1991, and their proclaimed hoax was publicized worldwide.

The burden remains with the cereologists to justify postulating anything other than such hoaxes for the mystery circles. We feel their time would be better spent attempting to identify more of the hoaxers and to learn what motivates them to do their work. In a chapter titled "Theories Update" in his and Colin Andrews's *Crop Circles: The Latest Evidence* (1990), Pat Delgado promises cryptically, "What the energy is and who controls it will be explained at a time considered to be more fitting." In the meantime, an insightful reviewer has characterized the circles effect as "a form of graffiti on the blank wall of southern England" (J. Johnson 1991).

Although the phenomenon has clearly exhibited aspects of social contagion like other fads and crazes—the goldfish-swallowing contest of 1939 comes to mind (Sann 1967: 789-792)—the graffiti analogy is especially apt. Just as graffiti is a largely clandestine activity produced by a variety of scribblers and sketchers posssessed of tendencies to indulge in mischief, urge religious fervor, provide social commentary, show off elaborate artistic skills, or the like, so the crop-circles phenomenon has seemingly tapped the varied motives of equally varied circle-makers—from bored or mischievous farmhands to UFO buffs and New Age mystics, to self-styled crop artists, and possibly to others. The phenomenon is indeed mysterious, but the mystery may be only the ever-present one of human behavior.

Acknowledgments

We are grateful to the following people for their help with this project: Dennis Pearce, for his computer analyses; Morris J. Blitzer and Charles T. Daugherty, for their professional opinions; Barry Karr, Lynda Harwood, and Kendrick Frazier of CSICOP for their

research assistance and encouragement; J. Porter Henry, Jr., for transcribing the videotape of a BBC program; Joseph-Beth Booksellers, Lexington, Ky., for help in obtaining books; and to the following, who provided assistance in various ways: Becky Long (Tucker, Ga.), Keith Pickering (Watertown, Minn.), Dixon J. Wrapp (Sebastopol, Calif.), Rob Aken (King Library, Univ. of Kentucky, Lexington), Glenn Taylor, Robert H. van Outer, and Robert A. Baker (Lexington, Ky.), Janet and Doug Fetherling (Toronto, Canada), Christopher D. Allan (Stoke-on-Trent, England), Mr. and Mrs. Charles Hall (Southampton, England), and to all others who have lent assistance, advice, and encouragement.

References

BBC program, "Country File," 1988. October 9.

Blitzer, Morris J. 1990. Interview by Joe Nickell, August 28.

Chorost, Michael. 1991. Circles of Note: A continuing bibliography." *MUFON UFO Journal*, 276: 14-17, April.

Daugherty, Charles T. 1990. Interview by Joe Nickell, August 28.

Delgado, Pat, and Colin Andrews. 1989. *Circular Evidence*. Grand Rapids, Mich.: Phanes Press.

Donnelly, Sally B. 1989. Going forever around on circles. *Time*, September 11, p. 12.

England perplexed by crop-field rings. 1989. *Denver Post*, October 29.

Field of dreams. 1990. *Omni*. December, pp. 62-67.

Fuller, Paul. 1988. Mystery circles: Myth in the making. *International UFO Reporter*, May/June, pp. 4-8.

Grossman, Wendy. 1990. Crop circles create rounds of confusion. SKEPTICAL INQUIRER 14: 117-118.

Haddington, Earl of. 1991. Letter to *The Cereologist* (Spring); quoted in *Skeptics UFO Newsletter*, 10: 7, July 1991.

Johnson, Jerold R. 1991. Pretty pictures. *MUFON UFO Journal*, 275: 18, March.

Johnson, Larry F. 1991. Crop circles. *Georgia Skeptic*, 4(3): n.p.

Kinder, Gary. 1987. *Light Years*. New York: Atlantic Monthly.

McGuire, Donna, and Eric Adler. 1990. More puzzling circles found in fields. *Kansas City, Mo., Star*, September 21.

Meaden, George Terence. 1989. *The Circles Effect and Its Mystery*. Bradford-on-Avon, Wiltshire: Artetech.

Meaden, G. Terence. 1989-90. A note on observed frequencies of occurrence of circles in British cornfields. *Fortean Times*, 53: 52-53, Winter.

Michell, John. 1989. The alien corn. *The Spectator*. August 12, p. 21.

———. 1989-90. Quarrels & calamities of the cereologists. *Fortean Times*, 53: 42-48, Winter.

The mowing devil. 1989-90. *Fortean Times*, 53: 38-39, Winter.

Mystery circles in British cornfields throw a curve to puzzled scientist. 1990. *Newark Star-Ledger*, January 10.

Noyes, Ralph. 1989. Circular arguments. *MUFON UFO Journal*, 258: 16-18, October.

———, ed. 1990. *The Crop Circle Enigma*. Bath, England: Gateway Books.

Pearce, Dennis. 1991. Report to Joe Nickell. July 21.

Pickering, Keith. 1990. Unpublished monograph, December 3.

Randles, Jenny. 1991a. Nature's crop circles, nature's UFO's. *International UFO Reporter*, May/June, pp. 14-16, 24.

———. 1991b. Measuring the circles. *Strange Magazine*, 7: 24-27, April.

Randles, Jenny, and Paul Fuller. 1990. *Crop Circles: A Mystery Solved*. London: Robert Hale.

Rings mysteriously appear in wheat fields. 1990. *Toronto Globe and Mail*, September 25.

Sann, Paul. 1967. *Fads, Follies and Delusions of the American People*. New York: Bonanza Books.

Schmidt, William E. 1991. Two "jovial con men" take credit (?) for crop circles. *New York Times*, September 10.

Shoemaker, Michael T. 1990. Measuring the circles. *Strange Magazine*, 6:32-35, 56-57.

Stacy, Dennis. 1991. Hoaxes and a whole lot more. *MUFON UFO Journal*, 277: 9-11, 15, May.

Story, Ronald D. 1980. *The Encyclopedia of UFO's*. Garden City, N.Y.: Doubleday.

Sullivan, Mike. 1991. MUFON's circular reasoning. *North Texas Skeptic*, 5(3): 1-3, 8.

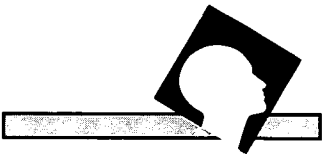
A witness from Whitness. 1989-90. *Fortean Times* 53: 37, Winter.

Joe Nickell, a CSICOP Fellow, is an investigative writer and author of many books, including Inquest on the Shroud of Turin *and* Pen, Ink and Evidence. *John F. Fischer is a forensic analyst in a Florida crime laboratory and author (with Nickell) of* Secrets of the Supernatural.

Update on the "Mars Effect"

SUITBERT ERTEL

The following article reports on a long-standing controversy about the so-called Mars effect hypothesis of the late Michel Gauquelin. The author, Professor Suitbert Ertel, cooperated with Gauquelin in evaluating certain aspects of Gauquelin's work. The article has been several years in preparation, review, and revision. Following it we publish a brief note by Paul Kurtz criticizing one key aspect of the analysis. Another study of the Mars-correlation claims, this by a French group that worked totally independently from Gauquelin, has just recently been completed. We plan to report on its conclusions when they become available.—Editor



Recent work on Gauquelin's alleged planetary effects reveals further puzzles.

The "Mars effect" is the most provocative claim of astrological descent because it is based on immense statistical research. It was launched in 1955 by Michel Gauquelin, who until his untimely death in May 1991 expanded with formidable energy what he thought would eventually release a Kuhnian revolution. Gauquelin was born in Paris in 1928. His interest in astrology began early. At age ten he could calculate a birth chart. At school his chart readings were so amazing that his friends called him Nostradamus. But were the claims of astrology true? Unconvinced by the success of his readings, and by the opinions of astrologers, Michel Gauquelin decided to find out for himself.

After graduating with a major in psychology from Sorbonne University in 1949, he began testing astrology nearly full-time, assisted in later years, until 1982, by Françoise Schneider-Gauquelin. His data and results comprise a dozen books (many translated into several languages) and about 150 scientific articles and monographs. During the first stage of this huge effort the results were negative for nearly

every hypothesis he tested, from simple ones like zodiac signs to more complex ones like planetary aspects and transits. He also tested astrologers to see if they could match birth charts to people of opposite characteristics, such as long-lived vs. died in infancy. But "astrologers regularly fail these tests and are sometimes so disillusioned that they accuse me of rigging the cases" (Gauquelin 1983:139). These negative findings have been amply confirmed by others. (For a review, see Eysenck and Nias 1982; also Dean 1986, for an update on tests of astrologers.)

However, when Gauquelin tested planetary positions relative to the horizon, to his surprise the results were positive. At the birth of eminent people, some planets (not all of them) seemed to concentrate in some sectors of the sky more than they should. (See Figure 1.) When expressed as a correlation the effect was typically 0.05 (Kelly et al. 1990:64), where 0 is no correlation and 1 is perfect correlation. So the deviation from what was

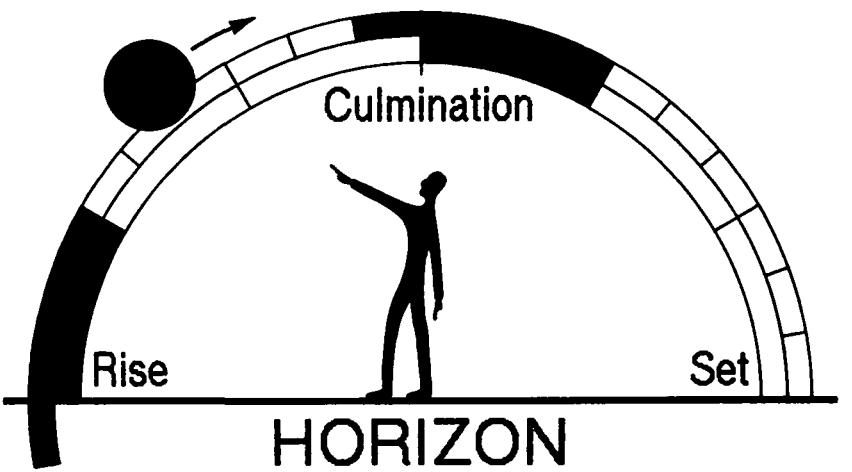


FIGURE 1: The "Mars effect"

At the birth of eminent people, Gauquelin found that certain planets seemed to be in the sectors shown in black (called "key sectors") more than expected by chance, or in some cases *less* than expected. The planet's movement was divided into 12 sectors (inner circle, 6 above horizon, 6 below), or 36 sectors (outer circle), in which case the proportion of key sectors was slightly increased. Astronomical and demographic influences were carefully controlled to avoid artifacts, i.e., spurious effects. The surplus or deficit varied between 9 and 28 percent of the expected frequency, mean 14 percent, and was statistically too significant (typically $p = .0001$) to be a statistical artifact even when adjusted for the number of tests. Sample sizes varied between 866 and 3,047, mean 1,650.

Gauquelin tested 11 professions, and in each case he found a relationship with one or more of five bodies, namely, Mars (after which it is named), the moon, Venus, Jupiter and Saturn, but not with the other planets or the sun. Different planets "favored" different professions; for example, the planet preferring key sectors was Jupiter for actors, Saturn for scientists, the moon for writers, and Mars for doctors, military leaders, and sports champions. It was also Mars for painters, writers, and musicians, but here Mars *avoided* key sectors. No effect was observed at the birth of ordinary people. The figures quoted are from Gauquelin 1984.

expected was very tiny. But it replicated when tested on new data and was statistically too significant to be ignored. A readable account and a later update, both essential reading for anyone interested in this work, are given by Gauquelin (1983; 1988b).

Gauquelin Hypotheses. For sports champions and Mars the relationship became known as the "Mars effect." It became famous, not because it was the only effect, but because it was the first to be independently tested. It illustrates two general hypotheses that Gauquelin formulated in 1960, based on a total sample of 20,396 cases, which guided his work from then on:

—Different professions are linked to different planets.

—The relationship increases with eminence and disappears for noneminent persons.

His subsequent work supported both hypotheses, although the effect size remained very tiny. Please note that I use the term *effect* in the sense of statistical correlation, not to imply that planets actually cause something.

A Fascinating Puzzle. Gauquelin's results have created a fascinating puzzle. His negative results pleased skeptics but upset astrologers, who found them hard to explain. His positive results pleased astrologers but upset skeptics, who found them equally hard to explain.[1,2] The outcome of this uneasy balance has been 40 years of attack from both sides. Skeptics will not, of course, share with astrologers any problem in explaining the negative results. But what about the positive results?

The positive results raise many questions. Are they genuine or due to artifacts? Why only with eminent people? If eminent people are related to the moon and four planets, why not the sun and other planets? Why do sector positions count and not zodiac signs or planetary aspects? If planet-birth relations are genuine, what could be the cause? Since 1985 I have been investigating these puzzles using trustworthy tools of analysis. The rest of this article is a nontechnical summary of what I found.[3] Full details are available elsewhere (Ertel 1986-1991).

Factor Analysis of 36 Sectors. The crucial question guiding my first seductive involvement with the planets was simple but vital: Is the Gauquelin data trustworthy? To answer it I submitted his total data to multivariate analyses, for unclean data, although possibly supporting a particular idea, should not give rise to any clean overall pattern. The outcome was two tests reported in detail in Ertel (1990).

In the first test I factor-analyzed the planetary frequencies in 36 sectors for births in each of the 11 professions. Differences between sample sizes and between sector expectancies were first removed by a statistical procedure known as z-transformation. The actual analysis was of difference values (eminent people minus ordinary people) to control astronomical and demographical influences, both of which were a concern for early Gauquelin critics.

Factor analysis looks at otherwise perplexing amounts of data to see if there is a small set of underlying dimensions that explain most of the surface variation. For example, factor analysis of behavior in a restaurant might reveal two underlying factors, namely, talking and eating, which together would account for most of the variation in behavior. If planets are unrelated to professions, then factor analysis should fail to reveal factors underlying the variation of

birth frequencies across 36 sectors. Instead, it should reveal only random variance, i.e., noise. But from 11 × 36 birth frequencies obtained from 11 professions (a total of 20,396 eminent people), a clear factor was extracted, on which Gauquelin's key sectors showed appreciable positive loadings of 0.5 to 0.8. In other words the key sectors explained most of the variation in birth frequencies.

Thus factor analysis confirmed the idea of planet-birth correlations largely independent of particular Gauquelin observations. Nevertheless it could be argued that I was merely analyzing data that had been selected in the first place. My second test avoided this problem.

Cluster Analysis of 11 Professions. In the second test I subjected the 11 professions to hierarchical cluster-analysis based on sector frequencies. This clustered the professions according to similarities in their planetary relationships.

As a control I had 30 students group the professions by conceptual similarity, following which I repeated the cluster analysis on their grouping frequencies. This clustered the professions by similarities as perceived by the students.

Comparing planetary and student clusters yielded a breathtaking result: The planetary and student clusters showed a near-perfect match (Ertel 1986; 1990). For example, at the first level of clustering, both planets and students divided the professions into fantasy-driven (e.g., actors, painters, musicians) and reality-driven (e.g., scientists, doctors, soldiers). Politicians provided the only disagreement—students preferred reality-driven and planets preferred fantasy-driven, although it might be difficult to argue with the latter.

Whatever the planets were saying, they seemed to make sense.

But this did not solve the remaining problem. What could mediate a link between planets and the birth of eminent people? Before we consider this problem, we must ask whether planetary relationships can be independently replicated.

Replication. Does the Mars effect replicate? Gauquelin's original finding was based not on sports champions, but on 576 French doctors. It was replicated on a further 508 doctors, and was also found for 570 sports champions and 676 military leaders, all of them French (Gauquelin 1955). It was subsequently replicated on 1,940 doctors, 915 sports champions, and 2,466 soldiers, and this time the births were Belgian, Dutch, German, and Italian (Gauquelin 1960). All cases were eminent. This convinced Gauquelin that the Mars effect was not an illusion.

That was the situation in 1960. Since then, three independent tests on new data have been published, two positive and one negative (respectively, Comité Para 1976 with 535 cases, Müller 1986 with 1,288 cases, and Kurtz et al. 1979 with 408 cases). A further test by Gauquelin on new data was positive (Gauquelin 1979 with 432 cases). So the results are not totally consistent.

One might suspect the inconsistency could be due to variations in method. Was Gauquelin's method faulty? Careful checks revealed no fault with the Gauquelin method of analysis (Eysenck 1975; Scott 1978; Rawlins 1978, 1979; Abell et al. 1983). What about calculation errors? Gauquelin (1984) checked by computer all his original hand calculations, but the outcome was essentially the same.

What about nationality? The two Gauquelin studies and the two positive replications involved European

births. The negative replication involved U.S. births. Was there something special about being born in the U.S.? The ensuing controversy provided no clear answer.[4] Nor was it resolved when a new Gauquelin sample of 349 U.S. champions showed positive results (Gauquelin 1982). So I decided to test the data in a new way by focusing on Gauquelin's second hypothesis, which was stronger than his first hypothesis (see above), but which he had investigated less thoroughly.

Grading the Eminence. Fortunately, reference books on sports are numerous. This means we can assess eminence by counting the number of books that cite a given champion. Other things being equal, a person of high eminence will be cited in more reference books than a person of low eminence.[5]

I took both sets of U.S. sports champions, i.e., the 408 cases with no Mars effect and the 432 new cases from Gauquelin, excluding births after 1950, looked up their names in 21 reference sources, and divided them into low eminence (no citations), medium eminence (one citation), and high eminence (two or more citations).[6] Then for each group I calculated the percentage born with Mars in key sectors. The results are shown in Table 1.

In Table 1, as the eminence of U.S. sports champions increases, so does the tendency for Mars to appear in key sectors in both sets of data. Furthermore, the 408 champions are generally less eminent than the 349 champions, a point confirmed by fewer mean citations per champion (1.04 vs. 1.99).[7] In other words, the overall eminence of the 408 champions is too low to show a Mars effect, but when graded it shows a trend in line with Gauquelin's hypothesis.

TABLE 1

Number of U.S. sports champions and percentage with Mars in key sectors.

Eminence	N = 408		N = 349	
	#	%	#	%
Low	216	18.1	98	21.4
Medium	107	21.5	89	21.3
High	85	25.9	162	30.2
Expected*		22.2		22.2
p of trend		.06		.05

*For 36-sector division.

Thus the previous inconsistency disappears.

Surprises. Using the same approach, I graded the eminence for other large samples, obtained by combining the original Gauquelin data collected by Gauquelin and others. The same upward trend appears for Mars and 4,391 sports champions, for Mars and Saturn and 3,060 artists, and for Jupiter and 1,397 actors (Ertel 1987; 1988b). The increase in planetary effect with increasing eminence is remarkably regular, and could not have been produced by Gauquelin's selecting the data—the measurement of eminence requires citation statistics and a computer, neither of which were available to Gauquelin in the 1960s. To me this rules out the possibility of data manipulation.

But there were surprises in store. The planetary effect for Venus and 866 musicians, 1,381 painters, and 813 writers decreased with increasing eminence. It also decreased for Saturn and 1,193 scientists and less clearly, for the moon and 813 writers (Ertel 1987; 1990). These deviating results are statistically too significant to be dismissed as random fluctuations, and

they are clearly exempt from any suspicion of data manipulation. But do they make sense?

Negative eminence effects tend to be associated with Venus and the moon. Positive eminence effects tend to be associated with Mars, Jupiter, and Saturn—but not always, as with scientists where the negative trend for Saturn is especially significant. Some groups, such as artists, even show both positive (Mars) and negative (Venus) eminence effects. So the situation is now more perplexing than ever before, and an explanation for opposite eminence effects seems a long way off. But we might hope that the general consistency of the opposite eminence effect would eventually reveal some meaningful pattern, as was already the case for planets vs. professions. However, irrespective of where this new challenge will lead, the primary problem remains: How to explain planetary effects in the first place?

Explanations. To date, six approaches have been advanced to explain, on a physical basis, the Gauquelin findings, most of them not mutually exclusive: (1) The fetus reacts to planetary signals and triggers birth (Gauquelin 1960; 1983; 1988a). (2) The signals are sensed by the pineal gland (McGillion 1980). (3) Men's beliefs have become genetically imprinted (Halbronn and Hutin 1986). (4) The signals are due to resonance between planetary tides and the magnetosphere (Seymour 1990). (5) Planets emit psychic signals sensed by the soul (Roberts 1990). (6) Men born under prominent planets were given high status and were expected to have more offspring. This biological advantage became naturally selected (Müller 1990).

All these explanations are incomplete because they require unknown energies or implausible links. In effect, they invoke one mystery to explain another. Nevertheless, we know that possible intervening variables, such as geomagnetism, can influence terrestrial life (e.g., Dubrov 1976; 1989; and Tomassen et al. 1990). If there is a physical basis, then it should be detectable by appropriate tests. I decided to find out.

A Physical Basis? At first sight the prospects are encouraging. There is no effect if the planet is too small (Mercury) or too far away (Uranus, Neptune, Pluto). But this prospect is immediately spoiled by the sun, which displays no relaxation despite being the first candidate for extraterrestrial effects that could conceivably lead to birth-time modulation.

No matter. I took a combined sample of 3,766 sports champions born from 1900 to 1965 and determined whether astrophysical variables had any influence on the Mars effect. For this purpose the sample is ideal—it is large, it shows a strong Mars effect, and Mars has much astrophysical variability. For example, the maximum Mars-earth distance is about seven times the minimum distance, the largest variation for any planet.

Does the Mars effect vary with Mars-earth distance? Does it vary with angular size and apparent magnitude? With declination and right ascension? With orbital position and distance from the sun? Does it matter if Mars is behind the sun? Does the effect vary with the prevailing geomagnetic activity on earth? If the Mars effect has any physical basis then the answers should tend to be yes. But in every case I found the answer was no. The Mars effect was stubbornly independent of all physical variations (Ertel 1989).

I then looked at the influence of geomagnetic activity on planetary

relationships for two very different groups of eminent people. Group A consisted of 6,058 professionals born with the respective planet in key sectors, for example, sports champions with Mars in key sectors and actors with Jupiter in key sectors. Group B consisted of 8,837 professionals born with the respective planet not in key sectors, for example, sports champions with Mars not in key sectors and actors with Jupiter not in key sectors. Thus the typical planetary association was present for every birth in Group A and for no birth in Group B. If geomagnetism has an effect, its variation across the 20 days preceding the birth day, the birth day itself, and 20 days succeeding it should show a significant difference between A and B, with the greatest difference occurring around the birth day itself. But no difference was discernible. Geomagnetism was without effect.[8]

So overall the results showed no evidence whatsoever that the Mars effect has a physical basis. But two possible clues still remained, namely, induction and aspects.

A clue from induction? Gauquelin held that the Mars effect was diminished for births after 1950. He attributed this to the increased prevalence of induced births and surgical intervention, and concluded that planetary relationships apply only if the birth is natural, which of course also supported his physical explanation. In his view, subtle stimulation of the fetus by planets could be expected only for births occurring under natural conditions.

However, his only published data are for 113 sports champions born in 1946 or later vs. 319 born earlier, so his sample size is very small (Gauquelin 1979). Worse, I found that the difference between the 319 earlier births and the 113 later births exists only for 12-sector division. For 36-sector division the difference disappears—as it happens many of the later births have Mars in the initial key sectors cut off by 12-sector division. (See the outer ring in Figure 1 [Ertel 1989].) So Gauquelin's ideas about induction are greatly in need of support from an appropriate test on a large sample. But having found no evidence so far for any other physical link, I would almost bet that his ideas resting on physiological assumptions will not be supported.

A clue from aspects? If the angle between, say, Mars and the earth's horizon is important, then the angle between Mars and, say, Jupiter might also be important. This idea is basically consistent with the astrological doctrine of aspects.[9] And, if true, might help to illuminate our planetary puzzle. Gauquelin had already tested his data for aspects, but his results were at chance level and showed no significant correlation with planetary effects. So he concluded that "any apparent aspect effects are in fact due to sampling fluctuations" (Gauquelin 1985)

Two years later Françoise Schneider-Gauquelin tested the same data. Despite getting the same observed frequencies as Gauquelin, she concluded that there was "a conspicuous aspect effect" (F. Gauquelin and Shanks 1987). Both Gauquelins compared observed frequencies with expected frequencies, but they calculated the latter in different ways, getting different answers and thus grounds for different conclusions. The problem got stuck in procedural dissent.

Planetary motion is nonuniform. For example, as seen from the earth, Venus is never farther than 48 degrees from the sun, and Mars spends five times longer in conjunction with the sun than in opposition. So the expected frequencies of particular

aspects are difficult to determine. I overcame this problem by avoiding expected frequencies altogether. Instead of comparing observed vs. expected frequencies, I looked at the distribution of births in calendar time. If sports champions tend to be born with Mars aspects, a plot of births vs. time should show a peak during those periods when Mars aspects occurred. But it did not. There was nothing special in the curve of birth frequencies during aspect episodes that might have distinguished them from random variation (Ertel 1988c).

Because the same data had shown a clear Mars effect, I could not blame the data for a negative aspect result. My hoped-for illumination of the Gauquelin puzzle did not occur. I did not much care that this result also denied a conceivable link between the Gauquelin effect and traditional astrological doctrine.

What Next? As I see it, the present state of empirical research on Gauquelin planetary relationships is more baffling than ever before. On the one hand, the eminence results support their reality, but the astrophysical results do not. When faced with this dilemma the usual reaction is to invoke some as-yet-unidentified statistical or psychological explanation. After all, the effect size is so small that an otherwise quite trivial factor would suffice. But likely contenders have been fully debated in the literature, and so far none is convincing (e.g., Ertel 1986-1991).

So what next? Skeptics have been reluctant to see any truth in Gauquelin's astrologylike claims, but they might eventually have accepted them as just an oddity of nature if they had fitted in familiar frameworks. Now, with all physical anchors for comprehension removed, a proper understanding of these astro-correlations is probably further away than ever. Nevertheless a few researchers, including myself, are still working on it. Indeed, the evidence is challenging enough for me to propose a new test, and to invite the collaboration of others.

A New Collaborative Test. My proposed collaborative test looks at the reality of the Mars effect, and at the influence of induced births. It needs three new samples of high-eminence persons as follows:

C 200 female champions—natural births
M 200 male musicians—natural births
C 200 female champions—induced or surgically assisted births.

The sample types have been carefully chosen to test specific hypotheses about the Mars effect. Based on previous results, the sample sizes are the minimum required to reliably detect the predicted effects. The hypotheses being tested lead to the following predictions:

Mars effect for C will be positive.
Mars effect for M will be negative.
Difference C vs. M will be significant.
If zero, or nearly so, the Mars effect hypothesis is disconfirmed.
Mars effect for Ci will be negligible. If not, and C and Ci are positive, induction effects are disconfirmed.

I invite the participation of skeptics in this test, particularly in establishing criteria for selection and in the collection of data.[10] Michel Gauquelin

was always ready to put his life's work to the test, so the willingness of skeptics to participate will ensure credibility on both sides. We can then hope for progress by whatever the results may eventually teach us.

Acknowledgments

I am grateful to Ivan Kelly, Rudolf Smit, and two anonymous *SI* referees for their comments on earlier drafts, to Geoffrey Dean for help in refining the present article, and to the late Michel Gauquelin for many discussions and unfailing assistance during my investigations.

Notes

1. The most common explanations are statistical bias (shoot enough arrows and some are bound to hit), procedural errors (two and two make five), selection bias (use only data that work), and fraud. Over the years, each has been minutely examined by impartial experts, even to the extent of people like myself examining Gauquelin's files, and convincingly refuted in what is now an extensive literature. Unfortunately, this does not prevent hostile critics like Garrett (1988) proceeding as if these detailed examinations and refutations did not exist—his brief one-pager assures us that "the real explanation of Gauquelin's results" is statistical, procedural, and selection bias. Worse still, it calls for precisely those checks that have already been implemented and published, with results supporting Gauquelin. Such ill-informed pronouncements do not reflect well on the skeptical literature.

2. The link between Gauquelin and astrology is usually overstated. Gauquelin has demolished most astrological claims, and the remaining link between astrology and planetary relationships is feeble. Astrology does not predict that only half the planets work for eminent people and none for ordinary people. Nor does it predict strength for the favored positions—in fact, it predicts the exact opposite. The effect sizes are far too tiny to be of use, so the astrologers' propaganda (that the Gauquelin results support their ideas) is misleading. Informed skeptics will justifiably see planetary relationships as an interesting hiccup but with insufficient potential to justify serious pursuit. Nevertheless, future historians of science may be thankful for this example of active interplay between an apparently immovable anomaly and the unstoppable force of science.

3. For convenience, the present summary is confined to the Mars effect. But I have also investigated related areas, such as character traits and planetary heredity, largely with negative results that are essentially consistent, in essence, with what is being reported here (see Ertel 1989; 1991).

4. For details of this debate see articles in the SKEPTICAL INQUIRER 1979-1983 and the *Zetetic Scholar* 1982-1983.

5. Citation counts are widely used as measures of eminence in orthodox research (Roche and Smith 1978; Garfield 1979; Simonton 1984). Rank orders by citations are generally highly replicable. The reference works used in the present study are given in Ertel (1988b). An alphabetical list of names and citation frequencies is available on request.

6. Births after 1950 were excluded to avoid the increasing prevalence of induced births. In the high-eminence group, the ten most-cited names (with birth years) are as follows:

1921 Charles Ezzard	1934 Maureen Connolly
1923 Harrison Dillard	1942 Cassius Clay
1928 Richard Gonzales	1944 Joe Frazier
1929 Richard Button	1947 Dick Fosbury
1930 Robert Mathias	1948 Peggy Fleming

Many of these names will be unfamiliar today. But sports fans of an older generation would probably agree that this selection is highly eminent.

7. Most of the 408 sports champions were football and basketball players largely obtained from U.S. reference works, such as *Who's Who in . . .* and Hall of Fame books. For such sports, local popularity may often be more important than international success. However, this is not true of champions in tennis, swimming, track and field, and other major nonteam sports, whose citations in international reference books are reliable indicators of outstanding sports achievement.

8. Similarly, Gauquelin (1989) found no effect of geomagnetic activity for eminent professionals. His early work suggested that planetary relationships between parents and children were unaffected by planet-earth distance and planet-sun angular separation, but were enhanced when geomagnetic activity was high. However, later replications were less encouraging, even suggesting that such planetary heredity did not exist (Gauquelin 1988a).

9. Planets are in aspect when they are separated by particular angles, such as 0, 60, 90, 120, and 180 degrees. Astrologers claim that people born with planets in aspect will exhibit the planetary qualities in combination. Thus Mars ("energy") in aspect to Jupiter ("expansion") is said to indicate extremism, while Mars in aspect to Saturn ("control") is said to indicate persistence.

10. Professor Ivan Kelly, chairman of CSICOP's astrology subcommittee, has expressed his willingness to cooperate. Professor Paul Kurtz has given helpful suggestions. GWUP, the German society of skeptics, has so far declined to participate. Collaboration is vitally important for the collection of data, because Gauquelin's eminent professionals (amounting to only one in roughly 20,000 births) are in short supply. So help is needed from skeptics in heavily populated areas where eminent births have not been tapped by the Gauquelins, such as South America and Asia, and which have accessible timed birth records.

References

Literature on the Gauquelin work runs to several hundred references, most of them hard to obtain. Readers may contact the author if they have trouble locating references.

Abell, G. O., P. Kurtz, and M. Zelen. 1983. The Abell-Kurtz-Zelen "Mars effect" experiments: A reappraisal. SKEPTICAL INQUIRER, 7:77-82.

Comité Para. 1976. [Comité Belge pour l'Étude des Phénomènes Réputès Paranormaux]. Considérations critiques sur une recherche faite par M. M. Gauquelin dans le domaine des influences planétaires. *Nouvelles Brèves*, 43:327-343.

Dean, G. 1986. Can astrology predict E and N? 3: Discussion and further research. *Correlation*, 6(2):7-52 (110 references).

Dubrov, A. P. 1976. *The Geomagnetic Field and Life: Geomagnetic Biology*. New York: Plenum.

———. 1989. *Symmetry of Biorhythms and Reactivity*. New York: Gordon and Breach.

Ertel, S. 1986. Wissenschaftliche Qualität und progressive Dynamik im Gauquelin-Paradigma. *Zeitschrift für Parapsychologie und Grenzgebiete der Psychologie*, 28:104-135.

———. 1987. Further grading of eminence: Planetary correlations with musicians, painters, writers. *Correlation*, 7(1):4-17. A small omission is restored in 7(2):34.

———. 1986a. Gauquelin's Planetenhypothese: Stein des Antosses oder Prüfstein der Vernunft? *Psychologische Rundschau*, 39:179-190.

———. 1988b. Raising the hurdle for the athletes' Mars effect: Association covaries with eminence. *Journal of Scientific Exploration*, 2:53-82.

———. 1988c. Relating planetary aspects to human birth: Improved method yields negative results. *Correlation*, 8(1):5-21.

———. 1989. Purifying Gauquelin's "Grain of Gold": Planetary effects defy physical interpretation. *Correlation*, 9(1):5-23. Followed on 24-33 by comments from Müller, Gauquelin, and Ertel.

———. 1990. Gauquelin contentions scrutinized. In Tomassen et al., 1990:255-266.

———. 1991. Scrutinizing Gauquelin's character trait hypothesis once again. *Correlation*, in press. Followed in the same issue by Gauquelin's response.

Eysenck, H. J. 1975. Planets, stars, and personality. *New Behaviour*, 29:246-249.

Eysenck, H. J., and D. K. B. Nias. 1982. *Astrology: Science or Superstition?* New York: St. Martin's Press (230 references).

Garfield, E. 1979. Is citation analysis a legitimate evaluation tool? *Scientometrics*, 1:359-375.

Garrett, A. 1988. Astrology and Gauquelin. *British & Irish Skeptic*, 2(5):17.

Gauquelin, M. 1955. *L'Influence des Astres: Étude Critique et Expérimentale*. Paris: Le Dauphin. For an abridged English translation, see Gauquelin 1988b.

———. 1960. *Les Hommes et Les Astres*. Paris: Denoël. For an abridged English translation, see Gauquelin 1988b.

———. 1979. *The Mars Effect and the Sports Champions: A New Replication on 432 Famous Europeans*. Scientific Documents, vol. 6. Paris: LERRCP.

———. 1982. *Report on American Data*. Scientific Documents, vol. 10. Paris: LERRCP.

———. 1983. *The Truth About Astrology*. Oxford: Basil Blackwell. (The title was imposed by the publisher.)

———. 1984. Profession and heredity experiments: Computer re-analysis and new investigations on the same material. *Correlation*, 4(1):8-24.

———. 1985. Astrological aspects at the birth of eminent people. *Correlation*, 5(1):25-25.

———. 1988a. *Planetary Heredity*. San Diego, Calif.: ACS Publications. An abridged English translation of the 1966 French edition, with an update to 1988.

———. 1988b. *Written in the Stars: The Proven Link Between Astrology and Destiny*. Wellingborough: Aquarian Press. An

abridged English translation of Gauquelin (1955; 1960), with an update to 1988.

———. 1989. Reply to Ertel. *Correlation*, 9(1):26-29.

Gauquelin, M., and F. Gauquelin. 1979-80. Star U.S. sportsmen display the Mars effect: A comment on the Kurtz-Zelen-Abell experiment. SKEPTICAL INQUIRER, 4(2):31-43.

Gauquelin, F., and T. Shanks. 1987. Analyzed by decade, the aspect effect increases. *Astro-Psychological Problems*, 5(1):19-25. Continued in 5(3):7-17.

Halbronn, J., and S. Hutin. 1986. *Histoire de l'Astrologie*. Paris: Artefact.

Kelly, I. W., G. A. Dean, and D. H. Saklofske. 1990. Astrology: A critical review. In *Philosophy of Science and the Occult*, 2nd ed., 51-81, ed. P. Grim. Albany: State University of New York Press.

Kurtz, P., M. Zelen, and G. O. Abell. 1979. Results of the U.S. test of the "Mars effect" are negative. SKEPTICAL INQUIRER, 4(2):19-26.

McGillion, F. 1980. *The Opening Eye*. London: Coventure.

Müller, A. 1986. Lässt sich der Gauquelin-Effekt bestätigen? Untersuchungsergebnisse mit einer Stichprobe von 1288 hervorragenden Ärzten. *Zeitschrift für Parapsychologie und Grenzgebiete der Psychologie*, 28:87-103. For an abridged English version see *NCGR Journal*, Fall Equinox 1989, 17-20.

———. 1990. Planetary influences on human behaviour ("Gauquelin effect"): Too absurd for a scientific explanation? Journal of Scientific Exploration, 4(1) 85-104.

Rawlins, D. 1978. Memorandum on the relation of the Mars' solar proximity to M. Gauquelin's Mars-sports results and claims. *Phenomena*, 4(3):22.

———. 1979. Report on the U.S. test of the Gauquelins' "Mars effect." SKEPTICAL INQUIRER, 4(2):26-29.

Roberts, P. 1990. *The Message of Astrology: The New Vitalism and What It Means for Our Future*. Wellingborough: Aquarian Press.

Roche, T., and D. L. Smith. 1978. Frequency of citations as a criterion for the ranking of departments, journals, and individuals. *Sociological Inquiry*, 48:49-57.

Scott, E. 1978. Letter to Zelen, Kurtz, and Abell. Personal communication cited by Gauquelin 1983:107.

Seymour, P. 1990. *Astrology: The Evidence of Science*, rev. ed. London: Arkana. Additional details kindly provided by the author, May 1991.

Simonton, D. 1984. Scientific eminence: Historical and contemporary. *Scientometrics*, 6:169-182.

Tomassen, G. J. M., W. de Graaf, A. A. Knoop, and R. Hengeveld, eds. 1990. *Geocosmic Relations: The Earth and Its Macroenvironment*. Proceedings of the First International Congress on Geo-cosmic Relations, Amsterdam, 19-22 April 1989. Wageningen: Pudoc.

Suitbert Ertel is professor of psychology at the University of Göttingen. His interests are the cognitive and linguistic features underlying personal belief systems, that is, open and closed minds, including paranormal claims by open-minded proponents. Mailing address: Institut für Psychologie, Gosslerstrasse 14, D-3400 Göttingen, Germany. Electronic mail address: SERTEL @DGOGWDG1.BITNET.

A Dissenting Note on Ertel's "Update on the 'Mars Effect'"

PAUL KURTZ

I seriously question Ertel's method, described in the preceding article, for determining "eminence." I will confine my discussion only to the "Mars effect" as related to "sports champions," for this allegedly showed the highest correlation between achievement and planetary positions. Surprisingly, Gauquelin maintained that the so-called Mars effect did not apply to sports champions, nor even to eminent sports champions listed in "who's whos," but only to the *most* eminent of sports champions, a very small sample. A very weak "effect" indeed.

Kurtz, Abell, and Zelen had questioned Gauquelin's method of determining eminence. The criteria seemed to fluctuate with each study. In the various French and European samples in which Gauquelin selected the data, he claimed evidence for a Mars effect. We suspected his method of selection and said that Gauquelin's experimenter bias could have intervened in the selection process. Gauquelin maintained that his criterion of eminence was "international fame." Regarding the American study of 408 sports champions, where our findings were negative (i.e., no support for a "Mars effect"), Gauquelin maintained that the results were positive; for by post hoc analysis, he eliminated football and basketball players, a large part of the American sample.

Ertel now supports Gauquelin's evaluation because he does not find U.S. football and basketball players cited often in European "who's whos." (See Ertel's note 7.) But this post-hoc criterion is questionable. American football and basketball players reach high eminence in the United States, but these sports were not popular in Europe when these sports who's whos were written. Thus I do not think that Ertel's analysis sustains Gauquelin, at least in regard to the American sample.

Regarding Gauquelin's subsequent U.S. sample, entirely selected by him, we have said that his principles of selection differed from those he used earlier. Our conclusion then was that Gauquelin's so-called Mars effect, at least for the American study, could be attributed to selective bias on the part of Gauquelin.

My own advice to Ertel was that he would do more to further research into the Gauquelin effect by doing an independent study without any involvement by Gauquelin in the selection or interpretation of data. He has not done so here, but has simply analyzed Gauquelin's data, which we believe is questionable. Regretfully, it is difficult to accept Gauquelin's thesis when he not only formulates the hypothesis of a planetary effect but is intimately involved in the assembling of data. Hence, I welcome Ertel's proposal for another independent test. We also await the results of a fresh sample of sports champions recently completed in France.

Two questions can be raised: (1) Is the present data in support of the Mars effect reliable? (2) If so, why does the effect occur? I am afraid that skeptics will have to be assured that the data are reliable and that data manipulation has not occurred before we can hope to resolve the second question. ■

Magic Melanin

Spreading Scientific Illiteracy Among Minorities: Part II

BERNARD ORTIZ DE MONTELLANO

Part I, on multicultural pseudoscience, appeared in the Fall 1991 issue.

Afrocentric beliefs include a range of tenets. One of the fundamental ideas is that Egypt is the source of civilization and that during its glorious days Egyptians were black. For some, Egypt was the source for European civilization by way of the Greeks, a claim for which there is some evidence. More extreme proponents claim that Egypt was the source of the New World civilizations of Mesoamerica and the Andes as well as Chinese and Indian civilizations. These are claims for which there is no credible evidence. As described previously (Ortiz de Montellano 1991), these ideas are being taught in the several urban school districts that have adopted the Portland *African-American Baseline Essays*. The *Science Baseline Essay* (Adams 1990a) claims, among other things, that thousands of years ago Egyptians flew in gliders, electroplated gold, knew accurately the distance to the sun, and discovered the Theory of Evolution. The essay also claims that "the Ancient Egyptians were known the world over as the masters of 'magic' (psi): precognition, psychokinesis, remote viewing and other undeveloped human capabilities." Psi is proclaimed to be a scientific discipline that is studied in leading universities today (Adams 1990a: 41-42).

Pseudoscientific theories about race provide the theoretical basis for many Afrocentric claims.

In our society, science has replaced religion as the main source of explanation about the natural world. Consequently, people as diverse as Madison Avenue hucksters and New Age gurus know that claiming a scientific basis for

a belief will make it easier to sell a product. Similarly, a particular group of African-Americans, sometimes called the "melanin scholars" or the "KMWR [pronounced *khemware*, after Kemet, the name for Egypt] Scientific Consortium," is providing a "scientific" rationale for Afrocentricity. Some of the better-known members of the group are: Leonard Jeffries, professor of African-American studies at the City University of New York; Wade Nobles, professor of African-American studies at San Francisco State University; Frances Cress Welsing, a Washington, D.C., psychiatrist; Richard King, a Los Angeles psychiatrist; and Hunter Adams, a technician at Argonne National Laboratory and author of the Portland *Baseline Science Essay*. The group's message is spread primarily by broadcasts on black radio stations of lectures given at annual melanin conferences. This method of dissemination makes documenting their assertions difficult; melanin scholars do not publish in journals or in easily accessible books. The main source of my information about this group is a number of lectures broadcast on the Detroit Public School's educational station, WDTR 90.9 FM.

The key idea of the melanin scholars is that melanin, a widely distributed pigment in the natural world, found in all humans, has a number of extraordinary properties that are best manifested in black people. They claim that melanin is a superconductor, that it absorbs all frequencies of the electromagnetic spectrum, that it can convert sound energy to light energy reversibly, and that it can function as a minicomputer to process information. According to the group, in addition to the skin, hair, and eyes, melanin is widely dispersed in the human body, for example, in twelve sites in the brain, in all the major organs, and in all muscles. The group

"Welsing claims further that everything that happens on Earth is converted to energy and beamed up to Sirius B. She maintains that the high melanin content of black people enables them to tap into that information."

claims that melanin is involved in the regulation of all psychological and physiological processes of the human body. They state that because of this people with high melanin levels have better muscular coordination (which makes them better athletes), are mentally superior, have unusual faculties, such as ESP, and are influenced by the magnetic fields of other humans and of the earth (Montgomery 1989). They attribute to melanin numerous other properties. Lectures about melanin are replete with scientific-sounding terminology: substantia nigra, solitons, phonons, electromagnetic radiation, melanocyte, extrapyramidal tract, pineal gland, hypothalamus, and so on. This creates the impression that there is a scientific base for the claims.

The alleged properties of melanin, mostly unsupported, irrelevant, or distortions of the scientific literature, are then used to justify Afrocentric assertions. One of the most common is that humans evolved as blacks in Africa, and that whites are mutants (albinos, or melanin recessives) (Welsing 1989; King 1991). No one disputes that humans evolved from Africa, but the rest of the statement profoundly distorts genetics. Afrocentrics treat skin color as if it was governed only by one gene, and thus

subject to absolute Mendelian dominance/recessiveness. If this were true, humans could only be black or white. However, skin color, like intelligence or height, is controlled by several genes, which explains why humans exhibit a wide color spectrum. Whites do not exhibit a total absence of melanin, but only a lesser amount. That is why whites can increase the amount of melanin in their skin by exposure to the sun. There is also no evidence that the amount of melanin in internal organs correlates with the amount of melanin in the skin. For example, the amount of melanin in the substantia nigra is normal in albinos (Siegel et al. 1989: 755).

Welsing (1989; 1991) uses the notion of whites as melanin recessives to explain white racism on a "scientific" basis. She professes that white men have to destroy black men in self-defense because black men have the potential to destroy white men genetically. According to Welsing, a white child can only be produced by having a white mother and father. She claims that all other combinations can only produce black children, and that black men are considered dangerous because they could force white women to have sex. These ideas are easily acceptable in parts of the African-American community where there is broad support for theories that claim the existence of a conspiracy to destroy black males. The high rates of murder, of imprisonment, and of drug use, as well as the high rates of unemployment among black males, are cited as evidence for the conspiracy. The seemingly scientific explanation and academic credentials of some of the speakers are impressive to audiences uneducated in science. This appealing "scientific" explanation for white racism, in turn, makes other melanin claims more likely to be accepted. For example, Barnes (1990) argues that cocaine is part of the racist plot because melanin and cocaine are both alkaloids and have a high affinity for each other. Barnes also claims that blacks can test positive for cocaine even a year after its most recent use, because cocaine co-polymerizes into melanin. Melanin is not an alkaloid and there is no evidence whatsoever for melanin co-polymerizing with cocaine *in vivo*.

The idea that melanin is an essential component of humanity and that it confers many desirable powers is expanded by others into classical racism. Wade Nobles (1989) states that whites stopped evolving with the development of the central nervous system (CNS), but that blacks continued to evolve an essential melanic system (EMS). From this he develops an "equation": CNS + EMS = HB (human being)—that is, whites are not fully human. Others, such as Richard King (1991), express the same idea by their repeated use of the term *hueman* instead of "human," with the connotation that only people with color are truly human. The idea that people to be discriminated against are not fully human has always been used by racists as a justification for their actions. It is sad to see it being used by people who have suffered so much from racism themselves.

The ideas of the melanin scholars are being spread in a much more insidious way. The melanin scholars are the theoreticians behind the *Science Baseline Essay;* its author, Hunter Adams, is one of the principal members of the group. It is interesting, however, that Adams does not use melanin as the basis for many of his examples. Maybe the claims for melanin are so radical that the association of the *African-American Baseline Essays* with melanin would hinder their adoption by school districts. However, many assertions in the

Baseline Science Essay that seem incongruous or are asserted without any rationale can only be explained or put into context by referring to theories espoused by the "melanin scholars." For example, the *Essay* claims that Egyptians in antiquity were black, that Egyptians were far in advance of other civilizations, and that Egypt was the origin of most scientific inventions. The explanation of the melanin scholars for these statements, unstated in the essay, is that melanin confers a mental advantage upon its possessors. Because melanin is the reason for their achievements, it is essential that Egyptians be black.

The claim in the *Science Baseline Essay* that Egyptians (i.e., blacks) have extrasensory powers is based on work by Frances Cress Welsing (1975). Welsing proposed that a correlation between high blood pressure and blackness of skin was due to the fact that melanin picks up energy vibrations from other people under stress. The darker the skin, the more melanin, and thus the more vibrations would supposedly be picked up. In turn, this higher sensitivity to vibrations of others would lead to higher blood pressure in the recipients. Welsing (1989) expanded this idea to explain why George Washington Carver was so successful in discovering useful products from plants. According to Welsing, Carver owed his success not to his master's degree in chemistry, but to the fact that he was very dark. She states that Carver discovered the components of plants and their uses because the plants "talked to his melanin and told him what they were good for" during his early morning strolls in the woods. The consequences of a wide acceptance of this notion by African-American schoolchildren could be quite damaging. Children could reject appeals from teachers to study hard for years in order to be prepared to become scientists. Black children could respond that in order to be a scientist all they need do is "Let my melanin pick up the vibes."

Welsing (1989) also provides the explanation for another of the *Baseline Essay*'s disturbing statements. Adams states that the Dogon of Mali discovered a dwarf companion of Sirius, Sirius B, which is invisible to the naked

"They claim that melanin is a superconductor, that it absorbs all frequencies of the electromagnetic spectrum, that it can convert sound energy to light energy reversibly, and that it can function as a minicomputer to process information."

eye. He also claims that they knew that it is extraordinarily dense and that it has an orbital period of 50 years (Adams 1990a: 60). Adams presents this theory without explanations or justifications, even though he is aware of Welsing's explanation. This leaves the reader wondering how the Dogon were supposed to have accomplished these feats. According to Welsing, the Dogon's melanin functions in a manner similar to an infrared telescope, and they were able to detect Sirius B through the melanin in their pineal glands. Welsing claims further that everything that happens on Earth is converted to energy and beamed up to Sirius B. She maintains that the high melanin content of black people enables them to tap into that information. She alleges that Greek oracles were black and that their melanin enabled them, as it does

present-day blacks, to foresee the future.

Adams (1990a) claims that astrology is scientific, but again does not provide an explanation. He presented his rationale in lectures at the 1987 Melanin Conference (Adams 1990b). The ability of melanin to absorb and respond to magnetic fields is a key component of his explanation of astrology. Adams also claims "that movement [magnetic motion] is reflective of the movement of the sun, moon, planets, and stars. Thus, at birth, every living thing has a celestial serial number, or frequency power spectrum. . . . This is the basis for astrology right here."

The melanin scholars have managed to avoid public scrutiny because of the manner in which their message has been disseminated. Leonard Jeffries has aroused the most publicity because of his position in media-intensive New York City (see, e.g., Tierney 1991) and his propensity for openly racist statements. However, the racist views of this group can potentially increase further the racial hostility in this country by providing a supposed "scientific" rationale that in one stroke explains white oppression and the genetic superiority of blacks. As the theoreticians behind the Portland *Baseline Essays*, they can increase scientific illiteracy among those poor urban children who are most in need of better science teaching. These children do not need pseudoscience traveling under the guise of multiculturalism.

References

Adams, H. H. 1990a. African and African-American contributions to science and technology. In *African-American Baseline Essays*. Portland, Ore.: Multnomah School District.

———. 1990b. Lecture at the 1st Annual Melanin Conference, San Francisco, 1987; broadcast titled "African World View," WDTR 90.9 FM, September 25.

Barnes, C. 1990. *Melanin: The Chemical Key to Black Greatness*. Houston, Tex.: C.B. Publishers.

King, Richard. 1991. Lecture at the 5th Annual Melanin Conference, Los Angeles, April 19-21, 1991; broadcast titled "African World View," WDTR 90.9 FM, June 4.

Montgomery, Bonachi. 1989. Broadcast titled "African World View," WDTR 90.9 FM, April 18; quoting from Carol Barnes, *Melanin: The Chemical Key to Black Greatness*.

Nobles, Wade. 1989. Lecture at the 1st Annual Melanin Conference, San Francisco, 1987; broadcast titled "African World View," WDTR 90.9 FM, June 27.

Ortiz de Montellano, B. R. 1991. Multicultural pseudoscience: Spreading scientific illiteracy among minorities—Part I. SKEPTICAL INQUIRER, 16, 46-50, Fall.

Siegel, G., B. W. Agranoff, R. W. Albers, and P. B. Molinoff. 1989. *Basic Neurochemistry*, 4th ed. New York: Raven Press.

Tierney, John. 1991. New York professor: Charismatic lectures and a penchant for controversy. *New York Times*, September 7.

Welsing, F. C. 1975. Blacks, hypertension, and the active skin melanocyte. *Urban Health*, 4(3):64-72.

———. 1989. Lecture at the 1st Annual Melanin Conference, San Francisco, 1987; broadcast titled "African World View," WDTR 90.9 FM, September 5, 12.

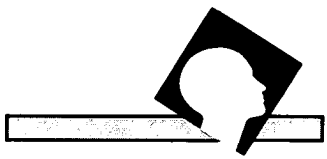
———. 1991. Broadcast titled "African World View," WDTR 90.9 FM, June 25.

Bernard Ortiz de Montellano is professor of anthropology at Wayne State University, Detroit, Michigan. He is one of the founding members of the Society for the Advancement of Chicanos and Native Americans in Science (SACNAS). His latest book is Aztec Medicine, Nutrition, and Health *(Rutgers, 1990).*

Adventures in Science and Cyclosophy

CORNELIS DE JAGER

Abstract: I discuss the methods of scientific research and illustrate this by describing the way astronomy emerged from astrology. I list some of the criteria used in modern scientific research, and I describe some of the main errors of pseudoscience. The "religion of the Great Pyramid" is based on the accidental coincidence of certain structural data of the pyramid with fundamental astronomical data. I show that this applies to my bike too.



"A rumination on the astrological roots of astrophysics and on the scientific method and pseudoscience leads straight (or roundly) to consideration of my bike."

1. The Astrological Roots of Astrophysics

Astrophysics certainly has its astrological roots. For the ancients, living, as they thought, on a flat earth, the firmament of fixed stars could be no more than a dome over the then known parts of the earth, an area with a radius of a few thousand kilometers. Surprisingly, there were amid these stars other objects, the wandering stars or planets, most of them brighter than the fixed objects, and roving along seemingly irregular paths through the starry vault. It is a logical deduction, in the philosophy of the ancients, that these planets were conveying messages of the gods to the mortals below. It was therefore imperative to decipher these messages; hence careful observation of the planets was a primordial task. (Besides, a fair degree of curiosity may have also been at the basis of the ancient studies of the planetary motions.)

In the course of these studies certain regularities were discovered in planetary motions, and an analytical approach to the study of planets gradually developed. Thus astrology

changed into astronomy. Models of the planetary motions emerged—that of Ptolemy being best known; but throughout ancient times the astrological roots were clearly there and often intertwined with astronomy. For a long time, there was even no distinction in the name. In addition, concepts of the universe were nearly exclusively based on the Platonic ideas that there must exist an ideal world, and that the observed reality is some kind of primitive and incomplete reflection of that ideal: our minds are supposed to have certainty of the reality, because it is thought that we should be able to understand the true contents of the changing appearances.

In that connection the question arose occasionally in the scientific literature of whether Ptolemy was a fraud: it is known that he sometimes chose those observational data that best fitted his model predictions, in order to illustrate his theory, and it seems that in other cases he even did not hesitate to change the data to obtain a better fit. In present times this approach would certainly be considered as a clear proof of fraudulent science, but in the light of the Platonic ideas of the Greek era such a behavior was legitimate.

The basic notion that research should be empirical—hence the idea that observations come first and only thereafter come interpretation and the establishment of regularities and "laws"—appeared in clear form only at the end of the Middle Ages, although there were enlightened minds in earlier times already. Reversely, Neoplatonic ideas continued to be entertained, even till the present time.

The Renaissance and the period thereafter show many examples of the struggle for a clear concept of the scientific method. Copernicus, on one hand the proponent of a revolutionary idea, still had Neoplatonic ideas, e.g., the assumption that the planets move in circular orbits. This was assumed to be so because the circle was considered to be the most perfect structure and "the Divinity always acts geometrically" (Pythagoras). Brahe's system, seemingly a step backwards as compared with that of Copernicus, did indeed better fit the observations. This may be another reason it took more than half a century before Copernicus's ideas got accepted—yet by a small group. Actually, only after Galileo and Kepler did his ideas get more generally accepted, albeit in an improved and modified form.

That Roger Bacon (13th century), but also Tycho (16th century) and even Newton, practiced alchemistry may seem strange in our eyes, but the study of alchemistry had the virtue of stressing the empirical approach—contrary to astrology.

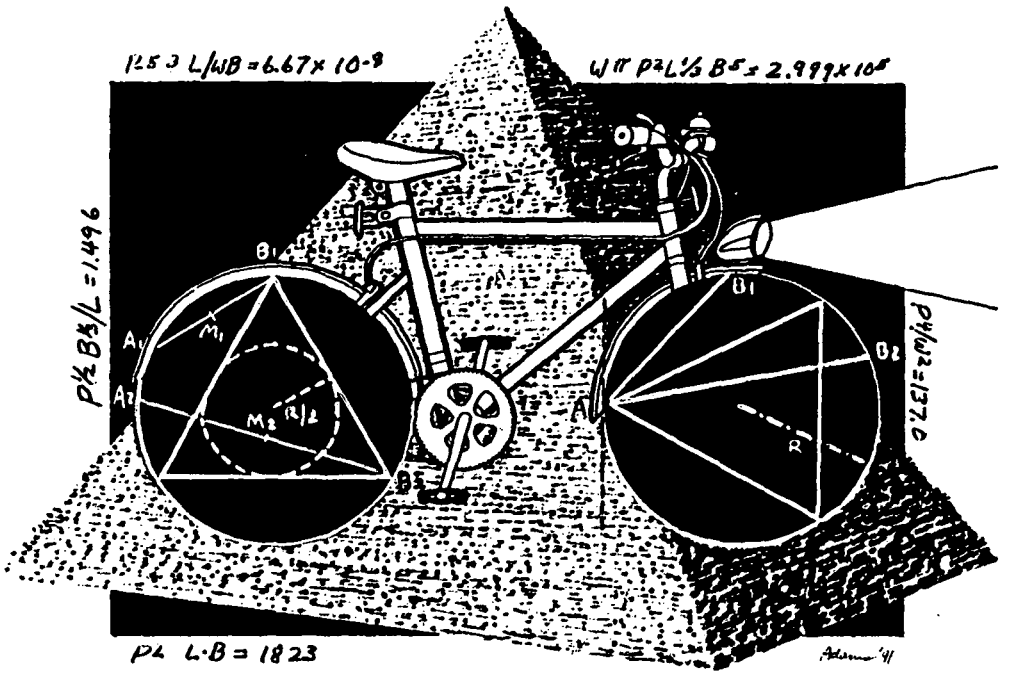
2. *The Scientific Method?*

Science is the ensemble of human endeavors to

—discover and describe the structure and origin of the surrounding reality and

—understand the causal relations between events and to establish the laws that govern them.

Hence science is based on the assumption that the same boundary conditions should yield the same results. However, exactly the same boundary conditions never occur twice in nature. Our laws are therefore abstractions. These abstractions are moreover only valid as long as their further refinement or correction has not been brought to light. In the course of time the domain and volume of mankind's knowledge has increased enormously, but there are levels and shades in our knowledge: while cer-



tain laws are very well established and can be considered as "certainly true" to a high degree of absoluteness, the interesting domains are the fringes of the area of our knowledge where the scientific battlefield is situated. It is there that the real adventure of scientific progress takes place, with all its great successes and disappointments.

The question then arises of whether a real and standardizable "scientific method" does exist. In my view it does not. Scientific research is the application of logic, common sense, and experience to the interpretation of the observations in their most general form. In the course of centuries mankind has developed and sharpened techniques for the deduction of "laws" from observations, or to check if a scientific conclusion (or a new scientific law) is closer to correctness than previous laws, but the methods are diverse and many.

Some of these criteria are:

—The argumentation should be logical and rational.

—The argumentation should be complete and adequate; there should be no voids in the argumentation.

—The hypothesis should be falsifiable; the experimental proof should be repeatable.

—The simplest assumption is often the best (Occam's Razor).

—The chance for accidental coincidence between data should be negligibly small.

—Very unlikely or extraordinary claims should be met with extreme care and built-in suspicion and must be supported by extraordinary evidence.

Yet one should not forget the dialectic aspect that the most successful and productive scientists are in many cases precisely those who dare to advance a new hypothesis on the basis of just-emerging new data or scanty or primitive information, often guided by intuition (which is just condensed and rich experience) rather than by overwhelming and convincing

evidence of the available facts.

The difference between science and pseudoscience is that in the latter some or all of the above criteria are not applied in the scientific process.

Pseudoscience—

—accepts results that lack proof of sufficient quality;

—deletes or changes empirical data that do not fit with a favorite assumption or theory, or selects only the best-fitting data;

—uses coincidences or correlation for proof, and takes correlation for causality;

—often gives excessive weight to a theory; expecting that it will allow one to explain everything still unexplained.

3. *The Religion of the Great Pyramid and My Bike*

The remarks above on pseudoscience can be illustrated. While astrology has had its days and has nearly disappeared from the scientific scene, other pseudoscientific beliefs related to astronomy are still around. One of these is the "religion" of the Great Pyramid, which arose when, in the first part of this century, the first explorers investigated the Egyptian pyramids. Particularly the pyramid of Cheops attracted attention. It has indeed some astronomical characteristics. It is oriented north-south with a high precision (1 in 3,000) and the ratio between height and base length is 1 to $\pi/2$. This first fact means that the ancient Egyptians had a precise notion of the points of the compass, and the latter has been interpreted as evidence that the ancients knew the number π already. I think this latter coincidence may be accidental, because later research has shown that earlier pyramids were built steeper but that these collapsed. After several experiments it was found that less steep pyramids survived.

Piazzi-Smith and others advanced extreme claims. By introducing the "pyramid-yard" (p.y.), which was 1/20,000,000 of the earth's diameter (64 cm), it was found that the baseline length of the Great Pyramid was 365.25 p.y.—exactly the number of days in the year. Does this mean that the builders of the pyramid knew the earth's diameter? Or the precise length of the year? Note that accepting these precise numbers means that the base length of the pyramid had been measured with the surprising accuracy of 15 cm, which seems difficult in view of the actual state of the pyramid. It also appears that twice the diagonal contains 25,826 pyramid inches (one p.i. being 1/25 p.y.), which is the precession period in years of the earth's axis. Note again that those giving this number with this accuracy implicitly claim to have measured the diagonal with a precision of less than a pyramid inch, hence better than a centimeter!

But one of the more surprising statements was that a precise mathematical formula could be found relating the base length of the pyramid in pyramid yards with the distance between the earth and the sun in kilometers! This would mean that the builders of the pyramid already knew the length of the kilometer several thousand years before the introduction of the metric system! More such remarkable relations between structural data of the Great Pyramid and data from (astro-)physics or human history were advanced, and they provoked interest and surprise in the public at large. The religion of the Great Pyramid bloomed.

Several aspects of pseudoscientific reasoning are clearly apparent in this description. The most obvious one is the exaggerated belief in coincidences

between numbers and the underestimation of the possible number of mathematical relations between simple numbers.

To illustrate this I wish to advance here a new religion, based on my Dutch bike. Why a Dutch bicycle? Evidently because a bicycle has in my country, the Netherlands, virtually the same status as the pyramids have in Egypt. In my country we have 15 million Dutch, but we have 16 million bikes.

I measured the diameters of my bike's:

—pedals, symbolizing the forward-going dynamics;

—front wheel, which directs my ways into the unknown future;

—lamp, enlightening my paths;

—bell, through which I communicate with encounterers.

Thus I laid the building stones for a new holistic four-dimensional religion apt to the coming New Age of Aquarius: cyclosophy.

The measurements were expressed in Holy Bike Inches, being 17 mm. This is so since 1 is the first prime number and 17 the seventh, and because seven is the holy number.

Calling P, W, L, and B the four measured quantities, it turns out that

$$P^2 \sqrt{L \cdot B} = 1823,$$

which is the ratio between the masses of the proton and the electron. It seems surprising that such a simple relation between three of the parameters of my bike yields such a fundamental constant; this may indicate that the Creator of my bike was very gifted indeed. Maybe he had supranormal gifts, because he may not have been aware of the values of the masses of the proton and the electron?

But there is more. The "fine structure constant," a very important number in fundamental physics, is

137.0. It appears that

$$P^4/W^2 = 137.0.$$

The constant of gravitation is $G = 6.67 \times 10^{-8}$, while

$$P^{-5}\sqrt[3]{L/WB} = 6.67 \times 10^{-8}$$

My bike also shows relation to fundamental astronomical data. For example, the distance between the earth and the sun, expressed in units of 100 million km, is 1.496. I find that

$$P^{1/2}\, B^{1/3}/L = 1.496.$$

The velocity of light is 2.998×10^5 km/second. My bike parameters yield

$$W^{\pi}\, P^2\, L^{1/3}\, B^5 = 2.999 \times 10^5.$$

May I suggest that the difference in the last digit should be a reason for physicists to reconsider measuring the velocity of light. For indeed: in the light of the foregoing coincidences it seems very unlikely that the error is with my bike.

I could give a much longer list of combinations, relating my bike to any arbitrary number ranging from the age of Santa Claus to the number of flowers in my garden. They should all fit perfectly.

4. *Comments on Cyclosophy*

There is nothing peculiar either with the Great Pyramid or with My Bike.

Let me choose four numbers A through D, aribitrarily chosen and arranged in the form

$$A^a \cdot B^b \cdot C^c \cdot D^d$$

where a, b, c, and d can have all integer values from −5 to +5, with the addition of the numbers + and − pi, ½ and 1/3. There are then 83,521 such combinations possible, and the chance that one of them fits with the measured quantity to within 0.01 percent is about unity. (Note that in the previous section I was careful enough to give all measured quantities in no more than three or four digits). A simple computer program suffices to print all those combinations that fit with the measured quantity to within, say, 0.1 percent. In most cases, some ten possible combinations are then printed, out of which I selected the best. A more sophisticated computer program than mine, with some more variables or a few more formulas, would do much better.

Coincidences occur regularly in numerical experiments, as in daily life. Those who do not realize that such coincidences are not "rare" often incorrectly use them to imply paranormal events. Most people greatly underestimate the enormous amount of possible combinations between numbers. And that has helped make it easy for many pseudoscientific misconceptions to arise and grow, and gain public appeal.

Cornelis de Jager is an astrophysicist with the Laboratory for Space Research, Sorbonnelaan 2; 3584 CA Utrecht, The Netherlands. This article is based on his paper at the International Skeptics Conference, Free University of Brussels, Belgium, August 10-11, 1990.

Searching for Security in the Mystical

The Function of Paranormal Beliefs

MARTIN R. GRIMMER

Over the past two decades, the paranormal has enjoyed something of a revival within popular culture. There have been countless books, magazine and newspaper articles, movies, and television programs devoted to topics ranging from UFOs, the Bermuda Triangle, lost continents, Yetis, and the Loch Ness monster, to pyramid power, astrology, levitation, telepathy, precognition, and poltergeists. Sociologist Marcello Truzzi (1972) suggested that this boom in paranormal interest began around the late sixties, noting that Ouija boards outsold such popular board games as Monopoly.

Lately, the paranormal seems to have manifested in the form of the New Age movement—a loose combination of ideas encompassing spiritualism, mysticism, alternative healing, and a healthy dose of commercialism. Some may think this is mainly an American phenomenon, but it is estimated that Australians alone now spend $100 million a year on personal-transformation courses that delve deeply into such fringe areas as rebirthing, shamanism, channeling, and crystal healing. To some observers, the New Age movement is seen as a sort of quasi-religious justification for "yuppiedom"—how to make money and feel "really great" about it at the same time.

Belief in the paranormal appears to satisfy some very basic, if inconsistent, human needs. It will probably remain with us forever.

Research studies worldwide have revealed an extensive belief in and acceptance of the paranormal. In a survey of the readers of Britain's *New Scientist* magazine, a high proportion of whom are reported to hold postgraduate degrees, Evans (1973) found that 67 percent believed that ESP was either likely or a fact. Surveys in America and Iceland reported by Schmeidler (1985) showed that 51 percent and 64 percent, respectively, claimed to have had at least one experience of ESP. A 1986 Gallup survey of American youths found that 46 percent believed in ESP, 52 percent in astrology, and 19 percent in witchcraft. A 1990 Gallup survey of American adults found that 49 percent believed in ESP, 49 percent in devil-possession, 36 percent in telepathy, and 25 percent in astrology (Gallup and Newport 1991). New Zealand psychologists David Marks and Richard Kammann (1980) surveyed their psychology students and reported that 80 percent believed that mental telepathy was fact, more than 50 percent believed in astral projection, and 33 percent believed in witchcraft. My own research at the University of Queensland (Grimmer and White 1990) revealed that 47 percent of students considered the evidence strong or very strong for ESP; 50 percent, for the Bermuda Triangle; 34 percent, for UFOs; 36 percent, for astrology; and 19 percent, for astral projection.

The present climate of paranormal interest is without a doubt a phenomenon of particular psychological and sociological importance. Indeed, Russell and Jones (1980) argue that the apparent persistence of such beliefs, despite major advances in scientific understanding and education, attests to their function in satisfying some basic psychological needs. Although there has been surprisingly little written on this topic, several themes in the human motive to believe can be identified.

First, paranormal beliefs may operate to reassure the believer that there is order and control in what may otherwise appear to be a chaotic universe (Frank 1977). Indeed, belief systems provide a framework for the organization and evaluation of new events and supply guidelines for what to select and attend to out of the diversity of experience. Findings that superstition (and paranormal belief in general) increases during times of uncertainty provide evidence for this human need for reassurance and control.

Zimmer (1984), for example, lists a variety of superstitious behaviors engaged in by athletes preparing for sporting events. Necessarily, this behavior serves to suppress anxiety and increase the faith in personal success. Similar behavior may be observed in students prior to an examination and in people employed in dangerous occupations, such as airline pilots.

Malinowski (1954) described the superstitious behavior of a tribe of Trobiand Islanders (from Papua New Guinea). He stated that fishing in their quiet lagoon was considered a routine activity. However, fishing trips into the more dangerous open sea were accompanied by elaborate superstitious rituals. Similar origins of pregnancy superstitions among northern Australian aborigines have been noted by Pearn and Sweet (1977). Kaagan (1984) noted a proliferation of belief in astrology and pseudoscience in general accompanying the economic and social chaos of Germany in the 1930s. The authoritarian appeal of Hitler and the Nazis undoubtedly had its roots in the need to escape from this chaos.

The illusory control of physical

events serves to alleviate feelings of helplessness and anxiety, and thus becomes self-validating (Snow and Machalek 1982). Certainly, holding an illusion of control may lead to increased efforts on the part of the believer, thus providing a greater frequency of reinforcement than would be achieved by sheer passiveness (Sosis, Strickland, and Haley 1980). To top it off, the failure of, for example, a superstitious ritual to achieve "control" presents no necessary challenge to the belief system. Festinger's (1957) cognitive dissonance theory explains how well rationalization can work here.

A second theme in the human need to believe involves equating the paranormal with its possibly unwilling bedfellow, religion. A belief in the paranormal may counteract what might be called "existential anxiety": the prospect of nonexistence, which all humans eventually face (Zusne and Jones 1982). The paranormal excels in its ability to provide antidotes to this anxiety. It holds out the promise of something beyond, something not yet experienced, something almost seen. And, in a way, a belief in the paranormal transcends what is seen as the mundane reality of the physical world.

Evidence for this second function of paranormal belief has come from the work of sociologists Bainbridge and Stark (1980a; 1980b). These researchers noticed the continuing decline in adherence to traditional religion and suggested it may no longer be meeting the needs of the population. They hypothesized that the paranormal may have come to provide a substitute faith to fill the void. In examining this hypothesis, an analysis was conducted of the major belief centers in the United States (Bainbridge and Stark 1980b). It was found that the main areas of traditional church attendance (the Southern and Central states) had the lowest number of cult movements, paranormal practitioners (including astrologers, alternative practitioners, and psychics), and subscribers to *Fate* magazine (a prime medium of communication for those interested in the occult). Conversely, those areas in which paranormal interest was highest (the Pacific and Mountain states) showed the lowest level of traditional church attendance. In a further study, Bainbridge and Stark (1980a) found that people with no religious belief were more likely than those with stronger convictions to believe in unconventional ideas (the paranormal) and more likely to accept Darwin's theory. The authors concluded that the decline in traditional religion, instead of instilling a new scientific rationality, has made way for other types of belief. This is a persuasive argument for the need to believe.

As well as the individual psychological functions of belief, there exists to some degree a social function. Depending on the extent of involvement, belief in the paranormal may serve to bind believers to one another (Frank 1977). Indeed, a shared belief system is important in the maintenance of a cohesive group. There are several reasons that people join groups, including to relieve boredom, to expand their social activities, and to gain prestige, security, and identity. Participation in a group also creates the opportunity to act on one's beliefs. The extent to which the individual's social needs are met will depend on the nature of the group, but these groups (ranging from UFO clubs to cult movements and churches) provide the opportunity for satisfying at least some of these needs.

Overall, it appears that a belief in the paranormal intrinsically results in the satisfaction of what are very basic, but to an extent inconsistent, human

needs: to seek control and stability while hoping for mystery and excitement. For this reason the paranormal, although it may fade in and out, will probably remain with us forever—perhaps a point worth considering for those who would wish to convert the public at large to empiricism.

References

Bainbridge, W. S., and R. Stark. 1980a. Superstitions: Old and new. SKEPTICAL INQUIRER, 4(4):18-31.

———. 1980b. Client and audience cults in America. *Sociological Analysis*, 41(3):199-214.

Evans, C. 1973. Parapsychology—What the questionnaire revealed. *New Scientist*, 57:209.

Frank, J. D. 1977. Nature and functions of belief systems: Humanism and transcendental religion. *American Psychologist*, 32:555-559.

Festinger, L. 1957. *A Theory of Cognitive Dissonance*. New York: Row, Peterson.

Gallup, G. H., Jr., and F. Newport. 1991. Belief in paranormal phenomena among adult Americans. SKEPTICAL INQUIRER, 15:137-146.

Grimmer, M. R., and K. D. White. 1990. The structure of paranormal beliefs among Australian psychology students. *Journal of Psychology*, 124(4):357-370.

Kaagan, L. 1984. Black cats, cracked mirrors and the Dow Jones. *Psychology Today*, 18(2):8.

Malinowski, B. 1954. *Magic, Science and Religion*. New York: Doubleday.

Marks. D., and R. Kammann. 1980. *The Psychology of the Psychic*. Buffalo, N.Y.: Prometheus Books.

Pearn, J., and J. Sweet. 1977. Origins of pregnancy superstitions relating to congenital malformations. *Oceania*, 68(2): 146-153.

Russell, D., and W. H. Jones. 1980. When superstition fails: Reactions to the disconfirmation of paranormal beliefs. *Personality and Social Psychology Bulletin*, 6:83-88.

Schmeidler, G. S. 1985. Belief and disbelief in psi. *Parapsychology Review*, 16:1-4.

Snow, D. A., and R. Machalek. 1982. On the presumed fragility of unconventional beliefs. *Journal for the Scientific Study of Religion*, 21:15-26.

Sosis, R. H., B. R. Strickland, and W. E. Haley. 1980. Perceived locus of control and beliefs about astrology. *Journal of Social Psychology*, 110:65-71.

Truzzi, M. 1972. The occult revival as popular culture: Some random observations on the old and the nouveau witch. *Sociological Quarterly*, 13:16-36.

Zimmer, J. 1984. Courting the gods of sport. *Psychology Today*, 18(2):36-39.

Zusne, L., and W. H. Jones. 1982. *Anomalistic Psychology*. Hillsdale, N.J.: Erlbaum.

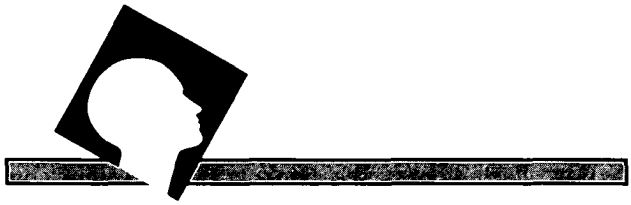
Martin R. Grimmer is in the School of Applied Behavioural Science, Griffith University, Nathan 4111, Brisbane, Queensland, Australia.

On Clarity

"It is usually found that only stuffy little men object to what is called 'popularization,' by which they mean writing with a clarity understandable to one not familiar with the tricks and codes of the cult. We have not known a single great scientist who could not discourse freely and interestingly with a child. Can it be that the haters of clarity have nothing to say, have observed nothing, have no clear picture of even their own fields?"

John Steinbeck and Ed Ricketts,
The Log from the Sea of Cortez
(New York: Viking Press, 1951, p. 282)

Book Reviews



The Cognitive Basis of Irrationalism

How We Know What Isn't So: The Fallibility of Human Reasoning in Everyday Life, by Thomas Gilovich. Free Press (Macmillan), 866 Third Ave., New York, N.Y. 10022. 1991. 216 pages. Cloth, $19.95.

ROBERT KINNISON

As I was preparing my notes for this review of *How We Know What Isn't So*, by Thomas Gilovich, the August issue of *Reader's Digest* arrived in the mail. It contained a three-page condensation of this book. The condensation was disappointing in content, containing only a review of a few of the examples used in the book while ignoring the good discussion of the psychological basis of those examples. However, it is encouraging to note that the popular press may be ready to concede that logic and evidence are not very important in most of the social and political decision processes that control our lives. SKEPTICAL INQUIRER readers will find this book interesting and particularly useful as a reference because it contains chapters on extrasensory perception and alternative health practices, and major sections on how the press manipulates information in order to sell their product.

The first part of the book, "Cognitive Determinants of Questionable Beliefs," contains three chapters that analyze our imperfect strategies for dealing with the messy data of the real world. This part starts with Chapter 2, which discusses random data and our tendency to see regularity and order where only the vagaries of chance are operating. Chapter 3 deals with incomplete and unrepresentative data and our limited ability to detect and correct for their effects. Chapter 4 describes our propensity to interpret ambiguous and inconsistent data in a way that supports our pet theories and a-priori expectations. People are overconfident in their assessment of their own analytical skills and tend to construct patterns where none actually exist.

Part 2 contains three chapters on the "Motivational and Social Determinants of Questionable Beliefs." Chapter 5 locates the roots of erroneous beliefs in self-serving distortions of reality. Chapter 6 examines the problems of using secondhand information and the distortions introduced by communicators, especially the mass media. They are obliged to both summarize and simplify, and must entertain their audience or lose them. Chapter 7 examines a set of cognitive, social, motivational processes that cause us to overestimate the extent to which others share our beliefs.

Part 3 presents case studies illustrating the mechanisms described in

parts 1 and 2. The cases include the belief in the efficacy of alternative health-care practices, interpersonal strategies, and extrasensory perception. Part 4 ends the book with a discussion of how we can improve the way we evaluate evidence from everyday life.

Gilovich has provided an outstanding introduction into the psychological and sociological basis of human reasoning. It is easy reading and doesn't use the professional terminology of psychology or sociology. It is also a good single reference for concepts that are important to workers in a wide variety of divergent scientific fields. This reviewer was first introduced to this field in the early seventies while working for a contractor to the Nuclear Regulatory Commission. As a statistician, one of my duties was to present results to decision-makers, including local politicians. It was painfully obvious that how you presented results was more important than what the results were. At that time, the Nuclear Regulatory Commission was funding substantial research in the field of human reasoning in order to curb irrational fears of nuclear energy. SKEPTICAL INQUIRER readers are well aware of irrational reasoning associated with such things as astrology, extrasensory perception, flying saucers, fundamentalist religions, and health fads. Biologists, astronomers, and geologists are up against the irrational reasoning of creationists. A scholarly look at political campaigns, particularly local ones, will yield examples of just about every irrational logic process the book describes.

The discussion of how the mass media operate is particularly informative. This discussion is spread throughout the book as examples and amplifications of associated concepts. Gilovich uses the concept of "sharpening and leveling," which I have not seen before. He shows how the press can impute considerable order to a really confusing situation by "sharpening" what the reporter considers the real point of the story and at the same time remove the confusion by "leveling" or omitting all the qualifications that put the situation in perspective. Furthermore, as stories are told and retold they tend to become cleaner and simpler. Other aspects of how the media operate are discussed in sections covering hidden data, data filtering, and an overconfidence in the representativeness of data. This last item, representativeness, is well known in the literature as the "gambler's fallacy," which is the assumption that deviations from the expected in small samples have causes other than randomness.

The weakest part of the book is the final chapter, which propounds a solution for overcoming the varieties of irrationalism described in the preceding chapters. All that is actually offered is a plea for good science education for everyone and the assertion that one who understands the psychological processes involved can cope with the problems. This isn't much help for people currently dealing with irrational decision-making. However, we cannot really criticize the author for not having a magnificent new idea that would eliminate the problem. No one has come up with much of a solution and the advice offered is the best that is currently available.

My main concern, important only to the professional student of human cognition, is that the text doesn't adequately review prior work in the field, although the extensive reference list does lead to what has been done. The reference list, and my files, show that some significant work started in the 1920s and again in the

1970s. Today, one can find articles discussing this field in sociology and psychology journals. Much interesting evidence in the literature suggests that the issues confronted in this book are as old as society. For example, in his autobiography, Benjamin Franklin discusses a time in his boyhood when a vegetarian fad swept through the colonies. He summarizes the public perception of the benefit of such a diet with the statement: "So convenient a thing it is to be a reasonable creature, since it enables one to find or make a reason for every thing one has a mind to do."

Robert Kinnison is a principal statistician for Reynolds Electrical & Engineering Co., Environment, Safety and Health Division. He has more than 25 years experience in the fields of environmental data analysis, analysis of the success of environmental restoration projects, and statistical safety analysis.

* * *

Case Study in Pathological Science

Too Hot to Handle: The Race for Cold Fusion. By Frank Close. Princeton University Press, Princeton, N.J. 376 pp. Cloth, $24.95.

TERENCE HINES

On March 23, 1989, chemists Stanley Pons and Martin Fleischmann (hereinafter P & F) held a news conference at the University of Utah that was widely covered on the national evening news programs that day. They announced that they had discovered a method for producing nuclear fusion in a test tube at room temperature. The term *cold fusion* was immediately used to describe this phenomenon. In the two-plus years since that news conference, cold fusion has turned out to be the greatest case of pathological science yet seen in the twentieth century. Frank Close's book tells the story of P & F's "discovery" and the subsequent events that destroyed, in the minds of all but a few, any belief that the claims for cold fusion were valid.

Nuclear fusion occurs when atomic nuclei are brought so close together that they stick. The mass of the stuck-together nuclei is less than that of the nuclei when separate. The "extra" mass is converted to energy, with the amount of energy determined by Einstein's famous equation, $E = mc^2$, where E is energy, m mass, and c is the speed of light. Since c^2 is a huge number, even a very small mass, such as that of atomic nuclei, will result in the release of a great amount of energy. If this was all there was to it, fusion would be easy. However, in order to get the nuclei close enough to actually fuse, their natural repulsive force must be overcome. This takes tremendous amounts of energy. The conventional method of obtaining fusion is to use heat on the order of hundreds of millions of degrees to speed the nuclei sufficiently so that the repulsive forces will be overcome. Needless to say, this is both difficult and extremely expensive. Still, since fusion would be a relatively clean

source of energy (it produces little of the radioactive waste that fission does), it has been the target of a great deal of research and money. Given the "clean" nature of fusion energy and the great expense of obtaining it in the conventional superheated fashion, one can understand the attractiveness of a claim that fusion could be obtained at room temperature using a very cheap procedure.

Close, himself a nuclear physicist, is in an excellent position to tell the story of this episode, as he attended many of the meetings at which the cold-fusion results were discussed, and he interviewed almost all of the major "players" in the events. There is a great deal more to the story of cold fusion than those who got their information from the popular media would have suspected. Even the scientific press, in such journals as *Nature* and *Science*, told only a fraction of the story.

It is clear from the material in this book why P & F went wrong. Probably, the single major problem was that with fusion they were working in the area of nuclear physics. As mentioned, P & F are chemists. Working outside one's area of specialization is always a danger; because, while one may be aware of the subtleties and "tricks of the trade" of experimentation and measurement in one's own area, these are not known in unfamiliar areas. The history of parapsychology is, for example, littered with scientists respected in their own field embarrassing themselves by making major blunders when they assumed that they were also experts in other areas of experimentation.

It turned out that P & F were fundamentally unfamiliar with how to measure the variables that would be expected to yield evidence for actual nuclear fusion. In a striking example, fusion should result in gamma rays with an energy of 2,224 KeV (thousand electron volts). P & F did measure gamma rays alleged to come from their fusion cells and reported, in the popular media and at scientific talks they gave, that they found gamma rays at about 2,500 keV. This is a major discrepancy, but P & F were not aware of it. In general, chemists didn't spot the problem, while physicists looking at the data did. The initial reports of gamma rays at 2,500 keV were made before P & F had published their findings. The serious problem with finding energy at 2,500 instead of 2,224 keV was, of course, pointed out to them. When they published their first paper (*Journal of Electroanalytic Chemistry*, 263:187-188, 1989) an amazing thing had happened. The results showed gamma rays at 2,224 keV. Nor is there any indication in that paper that gamma rays at 2,500 keV had been reported and, thus, no discussion of how 2,500 changed to 2,224. Other changes in the data took place between the verbal and media presentations and the published version. The reasons for these changes are still not clear, but it is very difficult to interpret the changes charitably.

P & F apparently believed that they had made a totally new discovery. Unfortunately, they had not done a literature review. Had they done so, they would have discovered that in the 1920s reports of experiments and findings almost identical to theirs had been published and later debunked. One of the most interesting chapters in Close's book reviews these early cold-fusion claims and a number of other examples of "fusion quackery" that I had not heard of before. Included is a description of a Nazi aircraft designer who convinced Argentina dictator Juan Peron that he had created a fusion reactor using a "huge spark-gap" (p. 36). Close's explanation of the basic physics of

fusion is also excellent.

As might be expected, given that the P & F experiment was performed with very simple equipment—equipment available in any well-supplied physics laboratory—and the great scientific and financial interest in the reported phenomenon, as soon as the news conference was reported attempts were made to replicate the findings. Unfortunately, at the news conference P & F did not give many details about exactly how their equipment was constructed. Nor were they forthcoming in response to questions about their exact methodology in the subsequent weeks. Not a good sign! In spite of this, many groups tried to replicate their findings, some repeatedly watching videotapes shot in P & F's lab, trying to glean tidbits of information on how the equipment was arranged. A group of MIT undergraduates who saw the March 23 report on television attempted to replicate the findings on that very evening. They didn't find any evidence for fusion.

When numerous groups of researchers attempt to replicate an exciting new finding, even if that finding is artifactual, some will "succeed" in the replication while some will correctly fail to replicate. The seeming successes may be due to errors of experimentation. However, in the heated atmosphere of the first few weeks following P & F's news conference, it was the alleged successful replications that got the lion's share of attention, both from the popular media and from P & F, who tended to dismiss failures as being due to "not doing it right." Alas, P & F failed to be explicit about what "doing it right" consisted of. As time passed, it was established that the seemingly successful replications were due to various sources of errors, some quite subtle. When these were eliminated, no evidence for fusion was obtained. Close discusses many of these replications and shows what went wrong to mislead the researchers into thinking that they had obtained fusion.

The story of cold fusion is a fascinating and important one. It is an object lesson in how highly competent scientists can be badly misled. Unfortunately, Close's book has two serious flaws. It is very badly organized. The chronological sequence seems to be almost random. One is constantly jumping back and forth through time. I found this extremely confusing. There is also a great deal of needless repetition. Identical points are made time and time again. In general, the book did not get the strong editorial hand it so badly needed. In spite of these problems, *Too Hot to Handle* should be read by anyone interested in pseudoscience and pathological science or simply a first-rate scientific detective story. In several chapters, the story is so inherently fascinating that the excitement blazes through the serious organization problems of the text.

Terence Hines is a professor of psychology at Pace University, Pleasantville, New York, and author of Pseudoscience and the Paranormal.

* * *

Putting Psychics to the Test on TV

"James Randi: Psychic Investigator," TV series produced by Open Media for Granada TV (broadcast in the U.K. on ITV nationwide in six parts, Wednesday, July 17, to Monday, August 21, 1991, at 9:00 P.M.).

James Randi: Psychic Investigator, the book. Boxtree, 36 Tavistock St., London WC2E 7PB, U.K. 159 pp. Paper, £6.99.

WENDY M. GROSSMAN

One of the more talked about television series in the U.K. this past summer was the six-part *James Randi: Psychic Investigator*, a pot pourri of a type that should be familiar to readers of *SI*. Produced by an independent company, Open Media, for Granada Television (one of the major regional commercial companies that together make up ITV), the series was eagerly awaited by skeptics.

Most of us were somewhat disappointed, particularly in the quality of the editing—parts of the series rush along as jerkily as if they had been edited by a second-year film-school student. In addition, Randi is not at his best as a host. Compared to his lively, confrontational, sparkling appearances on the Johnny Carson "Tonight" show, he seems stiff and, some said, even a bit bored.

Having said that, the series is an important breakthrough both for Randi and for British prime-time television. While most of the British talk-shows have at one time or another run mini-tests of celebrity psychics, this is the first time such tests have ever been well constructed or presented by an avowed skeptic. The series doesn't actually prove anything one way or the other, of course—the necessary volume of tests would put the audience to sleep—but it does bring home to a mass British audience, for the first time, that paranormal claims can be tested. And from casual conversations with randomly selected people (security and immigration officers at airports, journalists, people out shopping, school kids), this important point appears to have been made successfully.

Those outside Britain unfortunate enough to miss the series can console themselves with the book *James Randi: Psychic Investigator*. This basically recounts the tests that were carried out and their results, and has the added advantage of not having to rush through either the tests or the background information. While a lot of the surrounding material, on such topics as faith-healing and Lewis Carroll, will be familiar to longterm Randi fans, obviously the tests and other details will not. As a bonus, the book is written in Randi's familiar, aggressive style.

Topics covered include the New Age, dowsing, astrology, psychometry, faith-healing (including a rather grisly taping of a U.K. faith-healer), predictions, graphology, with miscellanea in-between. The tests themselves were fairly simple.

Soozie Holbeche, for example, whose claim to fame is using applied kinesiology to prove that the crystal she has selected is good for you, had to identify which of the five lumps,

each a velvet bag, was the crystal she had selected for a celebrity guest. She chose a lump of rat poison instead.

James Garvey, who claims he can see auras, was asked to use his special sight on five volunteers standing behind five screens. As the volunteers came out one at a time, Garvey had to say which screen each one had been behind. He got two out of five right.

Graphologist Duncan McIntosh was given handwriting samples from five women in five different professions and was asked to say which woman and her handwriting sample matched which profession. He got one out of five right—the same one that, seeing the five women on television, I guessed right without the benefit of the handwriting samples.

It is embarrassing to admit that the book will be a valuable reference for U.K. skeptics. It took Randi's coming to Britain to unearth Scotland Yard's ongoing project to study the use of psychics in police work, and to make clear how unregulated British alternative medicine really is. In addition, apparently some psychics commented on their appearances on the program in Britain's *Psychic News;* the book places Randi's rebuttals firmly on the record.

The series received a great deal of media coverage, including spin-off articles—the *Independent* newspaper, for example, sent its TV reporter, accompanied by two mediums, to watch one of the series and to record the mediums' comments; and Randi was interviewed on a number of talk-shows that have hosted celebrity psychics in the past. However, the ultimate sign of the series' impact was probably the review that appeared in the satirical magazine *Private Eye,*, which said, memorably, "Randi may not be paranormal, but he's not all that normal either."

James Randi with mediums (left to right) Coral Polge, Stephen O'Brien, Nella Jones, and Maureen Flynn, in the first of the "James Randi: Psychic Investigator" series. (Photo courtesy Granada TV.)

One common theme among the reviews was wonderment that the programs' researchers were able to get psychics to agree to appear on a program on which they were so likely to fail. We can only assume that the psychics thought they would succeed, that they thought they would benefit from the publicity in any case, or that the researchers were triumphantly diplomatic and persuasive. The answer is probably a mix of the three.

Wendy Grossman is a free-lance writer and the founder and former editor of The Skeptic *magazine (U.K.)*

* * *

Disturbing Chronicle of Three Faith-Healing Cases

Deadly Blessings: Faith Healing on Trial. By Richard J. Brenneman. Prometheus Books, Buffalo, N. Y., 1990. 390 pp. Cloth, $21.95.

DAVID LONERGAN

Richard Brenneman's fascinating and disturbing book *Deadly Blessings* chronicles three very different cases in which faith healing resulted in suffering or death. The former *Sacramento Bee* reporter meticulously documents three tragic incidents that took place in California between 1976 and 1987.

The first section of *Deadly Blessings* concerns the case of a 17-month-old child who died of bacterial meningitis while his Christian Scientist parents prayed, called in a healer, and worried—but never consulted a physician. Small children are particularly susceptible to disease; for example, bacterial meningitis (which usually can be cured by a rapid application of antibiotics) rarely affects anyone over the age of five. The child's parents, who denied their son medical treatment rather than conflict with their own voluntarily assumed religious doctrine, were acquitted of criminal negligence charges. Ironically, according to Brenneman, adult Christian

Scientists can sometimes obtain de facto permission to consult physicians in cases of serious illness; a child's discomfort cannot be felt by a parent or guardian, however.

In Brenneman's second and third cases the victims actually sought out and paid for irresponsible and dangerous treatments. A "psychic surgery" scam enriched a Filipino sleight-of-

hand artist who toured the United States under the auspices of a travel agency; expensive treatments "cured" cancer and many other diseases, simultaneously impoverishing the victims and, through false hope, delaying their eventual legitimate medical treatment. The psychic surgeon was sentenced to nine months in jail and a $400 fine.

Brenneman's third case was that of a famous Southern California psychologist, a former LSD-therapy researcher, whose abuse of authority and cultlike control of her communal patients/disciples led to the death of one of her followers in a bizzare "therapeutic" treatment. An investigation by California's Psychology Examining Board resulted in revocation of the psychologist's license to practice, but no criminal charges have ever been filed.

While the three cases documented in *Deadly Blessings* differ in many ways, they also have many factors in common. In each case there was an abuse of authority and trust by parents, self-proclaimed spiritual leaders, or licensed and once-respected professionals. Additionally, in each case there was an inability on the part of the criminal justice system to meaningfully deal with these abusers once they were identified.

Deadly Blessings is a remarkable book, made even more so by the fact that Brenneman is a former believer in Christian Science, New Age communalism, and psychic surgery. Indeed, his path through these delusions and out into the light of reason would doubtless make another fine book, but—this time—one with a happy ending.

David Lonergan is with the University Libraries, Northern Illinois University, DeKalb.

* * *

What About the Coelacanth?

Living Fossil: The Story of Coelacanth. By Keith S. Thomson. W. W. Norton, New York, 1991. 252 pp. Cloth, $19.95.

PAUL T. RIDDELL

Whenever someone argues for the existence of the Loch Ness monster, Bigfoot, the mkembe of Africa (allegedly a small sauropod dinosaur), the Lake Champlain beast, or any other claim of cryptozoology, dissent is usually drowned out with a cry of: "Well, what about the coelacanth? It was thought to be extinct for 70 million years, but it's still alive!"

Yes, what about the coelacanth? This poor fish, the sole known remnant of the Crossopterigii, the family of fishes that includes the ancestors of modern tetrapods, is truly a marvel, but for different reasons. For unguessable amounts of time, *Latimeria chalumnae* lived in mid-ocean depths off the Comoro Islands off the African coast, only to be discovered in the now-classic tale of one strange fish in

a South African trawler net.

Because of the constant embellishments and out-and-out fabrications spread in popular media about the coelacanth, Keith S. Thomson, one of the first non-French scientists to dissent and study *Latimeria*, delved into what was known about coelacanth physiology, behavior, and ecology, and offers yet another bit of ammunition against those who make cryptozoological claims without knowing science.

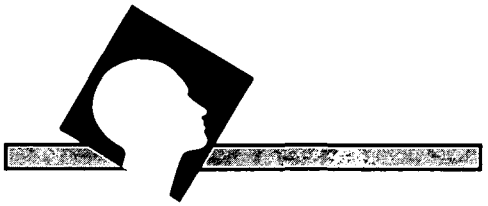
Contrary to the popular refrain of the "unknown" coelacanth, Thomson points out that the coelacanths were well-known to the islanders on the Comores, as they were easily caught on the same long lines used to catch the local oilfish, but were considered trash fish because they were unfit to eat. (Interestingly, the only good use for them, as far as the islanders were concerned, was to use the scales in place of sandpaper when roughing up bicycle inner tubes prior to patching holes.) After the second specimen was caught and offered to Professor J. L. B. Smith, who scientifically described the first specimen, many others have been dissected and studied, mostly by French teams, (until recently, the Comores were a French colony that gave its scientists first crack at research). Very recently, submersibles have shown the coelacanth in its native habitat, and the whole life story of *Latimeria* is presenting itself, and, most important, its continuing survival in the wake of increased fishing.

The story of the coelacanth shows why it is not the sort of creature that cryptozoologists want to use as a model, since it merely illuminates the inadequacies of the hunt for Nessie, Bigfoot, and so many other cryptobeasties. *Latimeria* was first discovered as a fluke off South Africa, but when its native habitat revealed itself, it was easily captured. All phases of its life cycle, from pregnant mother (the coelacanths are ovoviviparous, meaning they keep their eggs inside their bodies, but do not produce a placenta or other umbilicus from mother to offspring while in the womb) to hatchling to full adult, have been studied, and the main unknown now is how the population is reacting to the number of individuals caught for scientific purposes or for black-market purposes. Within 50 years, less than the amount of time spent on the Loch Ness phenomenon, the coelacanth went from cryptocreature to definite existence, while the people at Loch Ness still have nothing to show but questionable photographs.

True, the coelacanth was considered a hoax or a case of mistaken identity (some scientists of the time tried to explain it away as being some kind of mummy trapped in seabottom ooze, or as a deformed rock cod), but within 20 years, enough information had been gleaned from subsequent captures to prove its reality. While being skeptical requires being open to possible discoveries of this type, there is a difference between being skeptical and being gullible, and the crews that continue the search for creatures for whom no hard evidence has presented itself (particularly for as long a time as the Loch Ness crews have been at it) show signs of being the latter.

Paul T. Riddell is the Paleontology Desk columnist for Science Fiction Eye *magazine.*

New Books



How Do You Know It's True? Hy Ruchlis. Prometheus Books, Buffalo, N.Y., 1991. 112 pp., $12.95, paper. Illustrated book by science educator helps young readers (ages 11-15) discover the difference between science and superstition. Opens with chapters on "Fiction or Fact?", "The Nature of Superstition," "An Experiment with Superstition," and "Astrology: Science or Superstition?" Part 2 deals with science as a way of thinking, including how new facts are discovered; freedom of thought; probability and unusual events; luck, and chance; and science as a source of real knowledge and a solution to world problems.

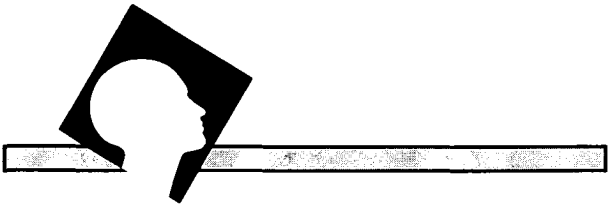
In the Mind's Eye. Daniel Druckman and Robert A. Bjork, eds. Committee on Techniques for the Enhancement of Human Performance, National Research Council, National Academy Press, Washington, D.C., 1991. 291 pp. $29.95 hardcover. The second report by this NRC committee of behavioral scientists critically examines, among other things, techniques that claim to improve performance by altering mental states: subliminal self-help audiotapes, meditation, pain-management methods, and hiding and detecting deception. Other sections examine methods for training (the studies are done for the U.S. Army) and enhancing individual and team performance.

The Satanism Scare. James T. Richardson, Joel Best, and David G. Bromley, eds. Aldine de Gruyter, New York, 1991. 320 pp. $44.95 cloth; $24.95 paper. Excellent collection of articles examining the contemporary anti-Satanism movement. From backgrounds in sociology, anthropology, folklore, and history, various authors view the social problem of Satanism as a social construction: Warnings about covens, backmasking, ritual abuse, and so on, are treated as *claims*, not necessarily as objective reality. Such analyses examine who is making the claims, what they stand to gain, and what rhetoric they use. "Claims-making is a form of persuasion," the editors emphasize. From these viewpoints the sections deal with anthropological and historical perspectives, the claimed threats to children, psychiatry and occult survivors, Satanism and the law, and rumors and news about Satanism.

Teach Your Child Math. Arthur Benjamin and Michael Brant Shermer. Lowell House, 1875 Century Park East, Suite 220, Los Angeles, CA 90067, 1991. 177 pp., $10.95, paper. Mathematics professor (and lightning calculator) Benjamin here teams up with psychologist Shermer, author of *Teach Your Child Science*, in a book aimed at making math fun for both youngster and parent. They turn math into a game: problems become math games, and the goals are to help both parent and child understand the benefits and fun of math, help stop the decline in math and science education, and stimulate creative thinking and show the "magic in math."

—*Kendrick Frazier*

Articles Of Note



Bartholomew, Robert E., Keith Basterfield, and George S. Howard. "UFO Abductees and Contactees: Psychopathology or Fantasy Proneness?" *Professional Psychology: Research and Practice*, 22(3): 215-222, 1991. Study of sample of 152 UFO contactees and abductees finds that 132 have characteristics of the *fantasy-prone personality* (FPP). Although they appear to function as normal, healthy adults, the authors say, FPPs experience rich fantasy lives and score dramatically higher than control groups on such characteristics as hypnotic susceptibility, religious visions, and apparitional experiences. They suggest clinicians consider testing contactees and abductees for fantasy proneness.

Blackmore, Susan. "Is Meditation Good for You?" *New Scientist*, July 6, 1991, pp. 30-33. Explores the validity of certain claims about meditation and also (the more important question scientifically) whether meditation has any effects.

Branyan, Helen B. "Medical Charlatanism: The Goat Gland Wizard of Milford, Kansas." *Journal of Popular Culture*, Summer 1991. In the 1920s, John R. Brinkley made a good living in Kansas by inserting goat glands into patients to allegedly restore sexual vigor. He advertised on his own radio station. The battle to close him down involved the state medical board, the Kansas attorney general, and the FCC.

Bromley, David G. "The Satanic Cult Scare." *Society*, May/June 1991, pp. 55-66. Bromley puts the current Satanism flap in the context of American "countersubversion ideologies," which have previously focused on witches, communists, etc. He describes the characteristic claims and the reactions, including the "demonization of daycare."

Chandler, Russell. "Bad Vibes Rock New Age Mecca." *Los Angeles Times*, August 4, 1991, p. 1ff. Modern mystics seeking psychic energy in Sedona, Arizona, are clashing with conservative churches, American Indians, and the U.S. Forest Service.

Disend, Michael. "The New Age Exorcist." *Details*, September 1991, pp. 28ff. Feature about professional deprogrammer Joe Szimhart, of Santa Fe, New Mexico, who is fighting, one case at a time, the growing world of cults across America.

Gardner, Dore. "A Mexican Healer." *Bostonia*, July-August 1991, pp. 35-39. A photo essay about Nino Fidencio, a Mexican faith-healer, dead fifty years, but still invoked by other Mexican healers. The photos are accompanied by more than a dozen quoted excerpts from patients/healers/investigators.

Gardner, Martin. "How to Fabricate a PPO." *Journal of the Society for Psychical Research* (U.K.), 58:43-44, 1991. The brief report Gardner described in his Fall 1991 *SI* column on how a so-called permanent paranormal object can easily be made by normal means.

Gilovich, Thomas D. "The 'Hot Hand' and Other Illusions of Everyday Life." *Wilson Quarterly*, Spring 1991, pp. 52-59. We all hold beliefs that are intuitively logical but objectively false. These tend to be based on misunderstandings of probability, the regression fallacy, and bias. Gilovich's examples include basketball "streaks," full-moon births, and pregnancies after adoptions.

Goff, Donald C., et al. "The Delusion of Possession in Chronically Psychotic Patients." *Journal of Nervous and Mental Disease*, September 1991, pp. 567-571. Psychotic patients who claim to have been possessed tend to have higher rates of cannabis abuse, childhood sexual abuse, and dissociation than other psychotics, suggesting that the delusion may relate to childhood trauma, among other things.

Hou Ruili. "The Golden Age of Traditional Chinese Medicine." *China Today*, March 1991, pp. 32-34. A popular overview of TCM with statistics on hospitals, herbal medicine, and acupuncture.

Peter W. Huber. "Quack Attack." *Reason*, October 1991, pp. 25-31. Critical examination of the modern "clinical ecology" movement, which maintains that the human body is under almost constant chemical assault, the chemicals causing almost every human affliction. From Huber's new book *Galileo's Revenge: Junk Science in the Courtroom.*

Markovsky, Barry. "Quack. Quack. Quack." *Iowa City Magazine*, August-September 1991. Essay by University of Iowa sociologist about the harm abandoning critical thinking can cause. "From holy wars and faith healers to quack therapies and presidential astrologers, physical, emotional, political, and economic damage is perpetrated upon the credulous."

Mathew, V. M., et al. "Attempted Suicide and the Lunar Cycle." *Psychological Reports*, 68:927-930, 1991. Analysis of 383 cases of attempted suicide during 12 complete lunar cycles (one year) gave no support for an association with lunar cycle, especially the full moon.

"Mysteries." *New Yorker* (Talk of the Town section), May 20, 1991, pp. 30-31. A light report on a speech by UFO believer Philip J. Imbrogno. His lecture included "fuzzy slides" of UFOs and tales of abductions.

Nathan, Debbie. "The Devil Makes Them Do It." *In These Times*, July 24-August 6, 1991, pp. 12-13. An overview of claims of Satanism and police reactions.

Nickell, Joe. "Les Preuves Scientifiques que le Linceul de Turin date dur Moyen Age." *Science et Vie* (France), July 1991, pp. 6-17. Response to critics of the carbon-14 tests showing the Shroud of Turin is of Medieval Age.

O'Connor, Brian P., and Karen Molly. "A Test of the Intellectual Cycle of the Popular Biorhythm Theory." *Journal of Psychology* 125(3), 291-299. Test of the existence of the intellectual cycle of the popular version of biorhythm theory. Subjects' performance on reaction time, free recall, cued recall, and spatial visualization tasks failed to provide evidence for the intellectual biorhythm.

Passantino, Gretchen, et al. "Satan's Sideshow." *Cornerstone*, 18 (90): 23-28, 1991. An unexpected find in a Christian magazine for college students: a thorough investigation of Lauren

Stratford, whose book *Satan's Underground* claims to tell of a lifetime of ritual abuse. The authors conclude that the book appears to be the fiction of a trouble mind.

Rennie, John. "Psychic vs. Skeptic." *Scientific American* (Science and Citizen section), September 1991, pp. 39-40. Good report on the lawsuits by Uri Geller against James Randi and CSICOP.

Sagan, Carl, and Ann Druyan. "Real Patriots Ask Questions." *Parade*, September 8, 1991, pp. 12-15. Article on the connection between the methods of science and the Bill of Rights. "If we can't think for ourselves, if we're unwilling to question authority, then we are just putty in the hands of those in power."

Schlesinger, George N. "The Credibility of Extraordinary Events." *Analysis*, June 1991, pp. 120-126. When a reliable witness reports a highly unlikely event, should we believe it? The article deals with highly technical questions of probability.

Shermer, Michael Brant. "Science Defended, Science Defined: The Louisiana Creationism Case." *Science, Technology, & Human Values*, Winter 1991, pp. 517-539. Describes origin and significance of the amicus curiae brief to the U.S. Supreme Court by 72 Nobel laureates, 17 state academies of science, and seven other scientific organizations in August 1986 in response to the Louisiana creationism "balanced treatment" act. "The Louisiana trial in general and the amicus curiae brief in particular have historical significance for the history of science, being unique in the collective mobilization of scientists both in defense of and defining science."

Sidey, Ken. "Doctors Dispute Best-selling Author's Back-to-Life Story." *Christianity Today*. July 22, 1991, pp. 40-43. Betty Malz has written six books concerning a near-death out-of-body experience she had in 1959. Now a Christian magazine has interviewed the doctors involved and examined the hospital records, which indicate Malz was never near death at all.

Skrabanek, Petr. "Demarcation of the Absurd." *Bostonia*, July-August 1991, pp. 31-34. Skrabanek takes scientists and physicians to task for being insufficiently rigid in rejecting the paranormal and the miraculous. Because medicine relies heavily on the patient's faith in doctors, medicines, etc., and because many physicians are reluctant to admit ignorance, medicine has not given faith-healing the scorn Skrabanek feels it deserves.

Tobacyk, Jerome, J. "Superstition and Beliefs About the Prediction of Future Events." *Psychological Reports*, 68:511-512, 1991. Study of 235 university students supports hypothesis that greater belief in superstition is significantly associated with greater belief in "paranormal divinatory procedures" and in "psychically gifted persons."

Watters, Ethan. "The Devil in Mr. Ingram." *Mother Jones*, July/August 1991, pp. 30ff. Examination of the bizarre case of Paul Ingram of Olympia, Washington, who confessed to child abuse of his daughter and participation in a satanic child-abuse ring but who now believes that his confession was based not on memories but on flimsy fantasies suggested to him by the investigator and his pastor. Considers why charges of satanic cults seem so frequently to follow charges of child abuse. Notes that experts

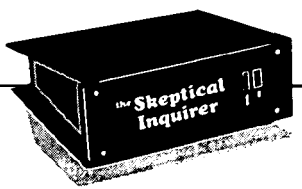
familiar with such cases say that blind acceptance of the phrase "Believe the children" has been partly responsible for the charges of Satanism. "Children learn very quickly in interviews what the interviewer wants to hear," Berkeley psychiatrist Lee Coleman says.

Weisburd, Stefi. "What's Beyond Belief" *Los Angeles Times*, August 12, 1991, p. B3. Feature about the SKEPTICAL INQUIRER. "Magazine puts startling claims, tabloid hype under close scrutiny."

Welborn, Victoria. "The Cold Fusion Story." *Science and Technology Librarian*, Spring 1991, pp. 51-60. Another review of the cold-fusion controversy, this one emphasizing the use and misuse of different avenues of information: press, refereed journals, conferences, etc.

Westmore, Ann. "Acupuncture Registration Evaded." *Search*, July/August 1991, p. 164. The Australian federal and state governments are reluctantly debating which agency should be licensing acupuncturists. They fear that licensing would legitimize the claims of practioners, but the current laissez-faire system is unsafe.

—Kendrick Frazier and Robert Lopresti



To preserve your copies of

Skeptical Inquirer

Order handsome and durable library binders $7.95

Please send me _____ Skeptical Inquirer Binders. **Total $**_____
(plus $1.50 for one, 50¢ for each additional binder, for postage and handling.)

Visa and MasterCard customers call **Toll-Free 800-634-1610**
(In NYS call 716-834-3222)

☐ Check or money order enclosed

Charge my ☐ MasterCard ☐ Visa

_____ Exp. _____

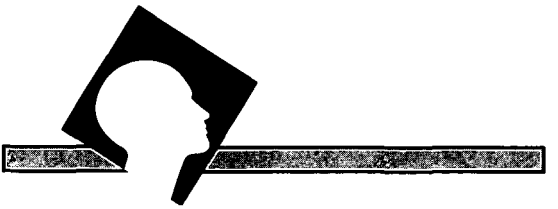
Name (PLEASE PRINT)

Address

City State Zip

Skeptical Inquirer • Box 229 • Buffalo, N.Y. 14215-0229

Follow-Up



'Three Door' Problem Provokes Letters, Controversy

KENDRICK FRAZIER

It was quite a time! Our Summer 1991 News and Comment article "Nation's Mathematicians Guilty of 'Innumeracy,'" by Gary P. Posner, about Marilyn vos Savant's *Parade* magazine columns on the "three-door problem," has stimulated far more letters to the editor than anything else we have ever published.

The letters began arriving only a few days after the issue reached subscribers, and they didn't begin to let up for many weeks. Even now, months later, new letters come in. Typically an article of special interest might provoke five or six letters; by the time we did the analysis below, we had received more than a hundred letters and the total continues to climb. Few were brief; almost all offered detailed explanations of the readers' views and reasoning. Some offered charts and tables and results from computer programs or tests.

Because we can publish excerpts of only a small fraction of these letters, we took up the offer of puzzle-fan John Geohegan to help us analyze and categorize them. Thirty-seven percent of the readers agreed that vos Savant's solution, "You should switch," was correct; 45 percent (most of whom agreed she was essentially correct, "but . . .") had valid criticisms that her statement of the problem omitted two essential assumptions and that this made a certain answer impossible. Eighteen percent maintained, despite all the explanations given, that she was still wrong; that the odds were equal whether you switched or not. (Several of these readers were quite adamant; some said they thought the article was a hoax. Thankfully, few were as arrogant as the Chicago attorney who wrote: "The contestant has no advantage in switching. . . . Marilyn vos Savant should stick to intelligence *qua* Pop Culture and leave the more serious matters of game-show probabilities to those who paid attention in high school algebra.) Four readers who first maintained emphatically that vos Savant's solution was wrong wrote again later asking that we disregard their previous letters; after further thought or discussions with friends they now understood the problem and realized she was correct. "Please trash that letter," said one. "I have finally figured out what you and she are talking about, and I'd rather not look . . . a fool. . . ." Many readers expressed irritation that vos Savant's statement of the problem didn't make explicit two necessary assumptions (that the host always offers the option to switch and that the host always opens a door with a goat behind it). But almost everyone seemed to enjoy the mental challenge the problem posed. One of my favorite letters gave two pages of discussion and then ended, "I really enjoyed this problem!"

Since our article appeared, several more things have happened. Vos Savant has published a fourth *Parade* magazine column on the subject (July 7, 1991) giving results of her "national test" with letters from schools who responded to her suggestion to test the solution (and revealing indeed a two-thirds chance of winning if you switch). And the *New York Times* published a 2,000-word front-page article ("Behind Monty Hall's Doors: Puzzle, Debate and Answer?" July 21, 1991) that explored the problem and the controversy about it at some length, with comments from game-show host Monty Hall, puzzle expert Martin Gardner, and statistician/probability expert Persi Diaconis. This report, *New York Times* science reporter John Tierney told me while reporting it, was stimulated by the Summer SKEPTICAL INQUIRER article.

Even though we can't publish most of the letters, they will all be useful. Ray Hyman, professor of psychology, University of Oregon, and a longtime member of the *SI* editorial board, has for many years used this kind of problem as a teaching tool in his psychology classes. At his request, we have shared the letters with him. He intends to use them to "tease out the psychological reasons why people have difficulty with this kind of problem."

Here we present John Geohegan's brief comments, followed by excerpts from representative letters (especially those that seem to offer useful explanations), and then a final comment by Marilyn vos Savant. Also note that as a result of all this interest, Martin Gardner has devoted his column in this issue to "Probability Paradoxes."

SI *Readers Show Their Stuff*

JOHN GEOHEGAN

In responding to Gary Posner's comments about innumeracy in the Summer issue, SKEPTICAL INQUIRER readers have demonstrated their competency. We analyzed the first one hundred letters. True, 18 readers disagree with Marilyn vos Savant's answer, but 37 readers agreed, and an additional 45 wrote to explain that the statement of the problem is ambiguous at best. Thus, on a notoriously confusing problem, 82 have presented "right" answers, and 18 "wrong."

One of those who criticized the problem's ambiguity was Robert Meservey of Lexington, Massachusetts: "To obtain Marilyn's result by probability theory, it is necessary to state that the host is *required* to open a second door and give the player a chance to change his choice no matter what the first choice is. Without this stipulation the player might reasonably conclude that the host only offered this choice when the correct door had been chosen already, since a change would then save the sponsor money. In these circumstances a change never wins, whereas no change has 1:3 odds."

Of the 37 who solved the problem as Marilyn intended, one of the most forceful arguments comes from Michael Mauser of Fairbanks, Alaska,

who writes: "Suppose the game-show lets you choose any one or any *two* doors, would you choose one door or two doors? This is actually what happens in the original problem statement. You just have to choose the door you believe is *least* likely to have the prize, then switch your choice after given this option."

In *The Second Scientific American Book of Mathematical Puzzles and Diversions*, published in 1961, Martin Gardner describes a slightly different version of this problem as "wonderfully confusing" and "difficult to state unambiguously." True, true.

John Geohegan is chairman of New Mexicans for Science and Reason.

The Problem

Here is the problem as originally published last year in Marilyn vos Savant's *Parade* column. We have inserted in brackets two phrases that might have clarified its implicit assumptions.

> Suppose you're on a game show, and you're given a choice of three doors. Behind one door is a car; behind the others, goats. You pick a door—say, No. 1—and the host, who knows what's behind the doors, opens another door—say, No. 3—which has a goat. [In all games, he opens a door to reveal a goat.] He then says to you, "Do you want to pick door No. 2?" [In all games he always offers an option to switch.] Is it to your advantage to switch your choice?

☐ *Readers' Comments*

I admit that when I first read Marilyn vos Savant's answer to the game-show question, I was convinced that she was wrong. At least I had some very impressive company. The problem is really quite simple. When you choose your door, you divide the set of doors into two subsets: set C (chosen—containing 1 door) and set U (unchosen—containing 2 doors). Since the likelihood of the car being behind each door is equal, then it is twice as likely that set U contains the door hiding the car. If you were asked at this point whether you wished to stay with your choice of set C or switch to set U, clearly you should switch. By opening a door that he knows does not hide a car, the host only confirms that not all doors hide cars. This was already assumed and has no bearing on whether set C or set U is more likely to contain the door hiding the car. Thanks for a fascinating problem.

Patrick Harren
Houston, Tex.

I was thoroughly entertained by the flap. Vos Savant correctly answered that your chances of winning double if you switch, but why this is true is

far from intuitive, as the number of outraged letters attest to. I have come up with what I think is the easiest way to convince the skeptical.

As vos Savant does, let us consider a hundred doors just to make the point with more emphasis. The puzzle then involves the contestant selecting a door, Monty revealing what is behind 98 of the remaining 99 doors, and the contestant being invited to switch. Now let's change the rules ever so slightly. Consider what would happen if, after you select your door, Monty invites you to stick with it, or to take what is behind *all the other doors combined*. Clearly, you would switch, as your first pick gives one chance in 100 of winning whereas taking all other doors now gives you 99 chances in 100. Surprisingly, this game is completely equivalent to the original.

Robert P. J. Day
Calgary, Alberta
Canada

You and Marilyn vos Savant are wrong. The set of facts upon which the question is based do *not require* the game show host to offer the contestant a second choice. The host seems free to offer the choice or not, at his option. Since he has prior knowledge of the winning door, random chance is no longer involved. Calculating the odds is not only irrelevant but impossible.

Paul Kelly
Boulder, Colo.

A colleague raised the "three-door" problem during the "Promoting Critical Thinking" discussion in a workshop I offered on teaching psychology. Most of the audience (and, truth to tell, I myself) were, like many of the mathematicians quoted in the Summer issue, resistant to the counterintuitive logic of the correct answer (which is that switching is more likely to win the car than not switching). I came up with the following account of why the "obvious" answer to the problem is wrong:

No matter which door the contestant picks, the chances of having chosen correctly is 1 out of 3 (33 percent), while the chances that the car is behind one of the unchosen doors is 2 out of 3 (67 percent). Thus the chances of winning the car would immediately improve if the contestant could switch from the lower probability category (the chosen door) to the higher probability category (the unchosen doors). Since there are two doors in the higher probability category, however, it is not clear which of them to pick until the host reveals which of them is a loser. The contestant now knows which one to choose in order to increase the chances from 33 percent to 67 percent.

Douglas A. Bernstein
Professor and Associate Head
Department of Psychology
University of Illinois
Champaign, Ill.

The News and Comment note about supposed innumeracy among mathematicians was quite misleading, as no real mathematical disagreement was involved. Most mathematicians, I think, would now agree that the original statement of the problem did not contain enough information for a solution. The published solution assumed that the host in the game show would always open a losing door, but that was not actually stated in the problem. If you make a different assumption about the underlying situation, you get a different answer.

A computer program incorporating one assumption about the rules would rightly be rejected by those making a different assumption.

William C. Waterhouse
Department of Mathematics
Pennsylvania State University
University Park, Pa.

Wait a minute. Where does the problem say that the host opens door No. 3 because it does not have the prize? Well, it doesn't. For all we know, the host might have opened door No. 3 first simply because he *always* opens door No. 3 first, prize or no prize. The way the problem is written, there is no reason to assume any connection between the door that the host opens and his knowledge of what's behind it.

I found myself troubled by the excerpts I read. Troubled because so many highly intelligent people were reduced to trading snide, sardonic little remarks and wielding computer programs and probability grids, all for a simple little puzzle that just wasn't worded very well. Didn't anybody try to read it both ways?

Albert Klumpp
Arlington Heights, Ill.

There are, I think, four levels of understanding of this brainteaser:

1. No knowledge of the laws of probability; yields simple bewilderment.

2. Knowledge of the laws of probability, but not taking into account that the game-show host gives away information by opening the second door; yields the irate contention that it is 50/50 either way.

3. Knowledge of the laws of probability, and taking into account that the game show host gives away information, but assuming without basis that he is obliged to offer the contestant the option to switch in every case; yields the contention that the contestant should take the offer to switch.

4. Understanding all of the above, realizing that the game-show host has every reason to refrain from offering the contestant the option to switch except when the contestant has chosen the car on the first try; yields the contention that the contestant should refuse the offer to switch.

Tim Stryker
Fort Lauderdale, Fla.

I am afraid the only ones guilty of "innumeracy" are you, your magazine, vos Savant, Posner, reader Lenna Mahoney, and the rest of vos Savant's supporters on this issue, not the "nation's mathematicians." Posner should stick to medicine and leave mathematics to those trained in it. Mahoney had better check her simulations and make sure that her atmospheric science background didn't "cloud" her programming logic.

The *switch* strategy does not lead to any advantage whatsoever despite vos Savant's mumbo-jumbo of an explanation.

W. Allen Cochrane
Smyrna, Ga.

I suspect this item was intended for your April Fool edition. . . . In the end there are only two doors, and only one of them leads to the car. At that time, the odds are 1:2 regardless of how that situation evolved.

Suppose you flip a coin 999 times, and it comes up heads every time. On the 1,000th flip, the odds of getting

another head are still 1:2. If you want to determine the odds of getting 1,000 consecutive heads, then you may properly consider the preceding 999 flips.

Jimmie R. Osburn
Savannah, Tenn.

The point overlooked by all those critics of Marilyn vos Savant is that the host of the show knows where the car is. By opening a door he knows will render a goat, the host imparts some of his knowledge to you, the contestant. If the host doesn't know which door the car is behind and just happens to open a door with a goat, the decision whether to switch is 50-50.

Donald Keith
Waterloo, Ontario
Canada

It is entirely possible that the various mathematicians who erred on this problem had forgotten that the host was not choosing the door or doors at random. A devilish little problem for the unwary!

Christopher D. Allan
Alsager, Stoke-on-Trent
England

Boy! You guys really had me going. First of all, I did not accept your explanation of why it is to a player's advantage to switch his or her choice after being shown a door that did not have the prize behind it. I was convinced the odds were 1/2.

With calm assurance, I wrote a short computer program to simulate the problem. I was certain that in 10,000 trials, I would see about 5,000 hits if the player switched and 5,000 if he or she didn't. When I ran the program, the results: 6,679 wins on switching, 3,321 on standing pat! I was stunned. Had I made a programming error, however unlikely that might be? No, the code was fine. So why was there a 2/3 likelihood of success upon switching? Upon further analysis, I determined that the code and the 2/3 probability were both correct. However, my explanation is different from the ones that appeared in the SKEPTICAL INQUIRER (which I still do not find compelling).

Rather than being a problem in probability (a red herring), it is a problem in Boolean logic. Succinctly put, a switching strategy on the second guess negates the outcome of the first guess. Since the odds of making a *wrong* choice on the first guess are 2/3, you have a 2/3 probability of winning with this strategy.

Joseph G. Dlhopolsky
Port Jefferson Station, N.Y.

There are a number of lessons to be learned from the confusion generated by the "brainteaser." One is that apparently simple problems in probability can be confusing, even to well-trained mathematicians. Anyone familiar with the history of probability theory can produce examples of eminent mathematicians, especially prior to 1660, who produced wrong answers to "elementary" problems in probability theory. A second lesson is that it is usually a good idea when defending one's own solution to these kinds of problems to avoid high levels of self-confidence. A third and final lesson is that, as with any discipline, it is wise to consult the relevant literature before attempting to reinvent the wheel. Steve Selvin provides a brief discussion of the brain-

Marilyn vos Savant Comments

I'm glad you're enjoying the game-show controversy.

Your readers may be interested to know that virtually all of my critics understood the intended scenario! I personally read nearly 3,000 letters [to *Parade*] (out of the many additional thousands that arrived) and found nearly every one insisting simply that because two options remained (or an equivalent error), the chances were even. Very few raised questions about ambiguity, and the letters actually published in the column were not among them.

But for those readers now interested more in the analysis of ambiguity, let me offer the following notes. When I read the original question as it was sent by my reader, I felt it didn't emphasize enough that the host always opens a door with a goat behind it, so I added that to the answer to make sure everyone understood. And as for whether the host offers the switch each time, I don't see that as a valid objection. It wasn't offered as a factor, so the original is the paradigm. The contestant chooses a door each time; the host opens a door each time. (The contestant doesn't choose a door and *open* it next time; the host doesn't open the *contestant's* door next time; the host doesn't offer the contestant *money* next time.)

Just because a similar game show appeared on television doesn't warrant the assumption that the published problem involves considerations as subjective as creating audience excitement or saving the sponsor money!

But as the response from your readers shows, it's all been great fun, and we've certainly learned a lot.

Marilyn vos Savant
Parade Publications, Inc.
New York, N.Y.

teaser (also known as the Monty Hall problem) in the Letters to the Editor section of the *American Statistician*, February and August 1975.

Robert S. Lockhart
Toronto, Ontario
Canada

I do not understand why it should take eminent mathematicians from MIT, and computer programs, to verify Marilyn vos Savant's answer. A simple explanation, like the following one, should be sufficient to clarify the matter:

You have three doors A, B, and C. Assume the car is behind B. If you pick A, then C must be opened, and if you switch to B, you win. If you pick C, then A must be opened, and if you switch to B you win. If you pick B, then either A or C must be opened, and if you switch to either one, you lose.

Thus, no matter behind what door the car is, if you switch your chance to win is always 2/3.

However, as vos Savant correctly deduces, once the switching possibility is removed, the chance to win the car is 1:2.

Bernhard H. Schopper
Alexandria, Va.

If I were playing vos Savant's game I would switch every time. That way I would lose each time I chose the car initially (one time in three tries). I would win each time I chose a goat initially (twice in three tries).

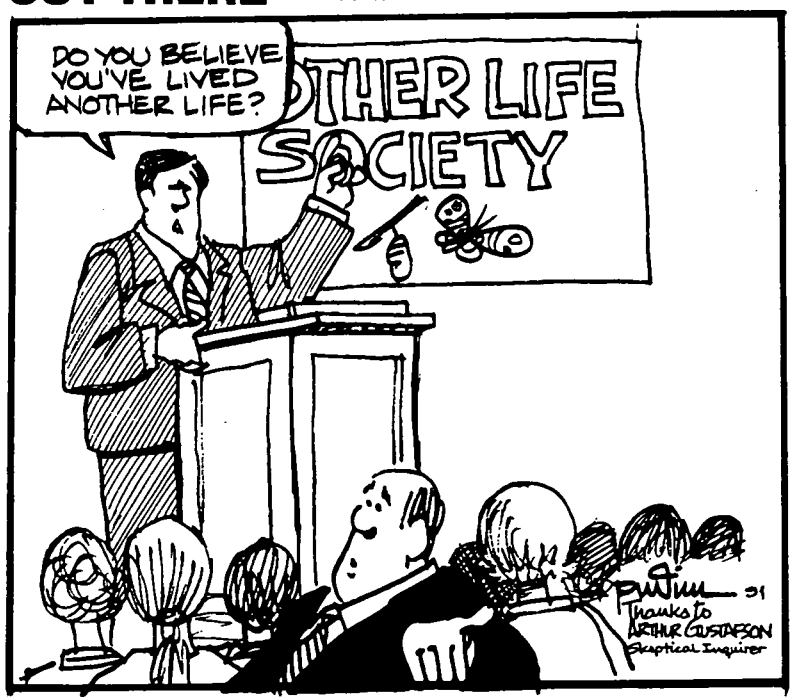
And I wouldn't give a damn for mathematics or probabilities.

Blake Matthews
Winston-Salem, N.C.

I was amused by the elaborate attempts to explain the best strategy to use in the game-show contest popularized in Marilyn vos Savant's *Parade* column and discussed in your article. ("It wasn't until I started writing a computer program. . . .") If I am the contestant and my strategy is always to stick with my initial choice, then the probability that I *win* is 1/3. If my strategy is always to switch, then the probability that I *lose* is 1/3, since I lose only if the car is behind the door I first choose. As I either win or lose every time I play, the probability that I win using the switching strategy is 2/3.

James G. Simmonds
Department of Applied Mathematics
University of Virginia
Charlottesville, Va.

OUT THERE Rob Pudim



HUGO HOGMIRE DECIDES NO. BECAUSE OF ALL THE STUPID MISTAKES AND BIG-TIME SCREW-UPS HE'S MADE IN THIS ONE.

A Response to Martin Gardner

FORREST M. MIMS III

Shortly before I went on a cruise to measure the ozonesphere during last summer's solar eclipse, I read the articles by Robert Felt and Martin Gardner in the Summer 1991 SKEPTICAL INQUIRER about the withdrawal of my assignment as a columnist for *Scientific American.*

Felt based his report on personal interviews and a review of the correspondence. His piece is reasonably objective and among the few that reports that editors at *Scientific American* asked me questions about abortion and my Christian faith in addition to Jonathan Piel's single question about Darwinian evolution.

Gardner's piece has many errors, and after two days at sea I looked for a quiet place to compose a response. As usual, the ship's casino was virtually empty, it's sole occupant being a plump old gentleman wearing a red bow tie seated before an expensive 386 laptop perched on a gaming table.

"Are you here to gamble?" he asked.

"No," I explained, "just looking for a quiet place to work."

"That's too bad," he sighed as he introduced himself. He was Register X. Array, the famous professor of skeptical statistics. An outspoken opponent of gambling, Professor Array was on the cruise to study the ultimate gamblers: eclipse chasers. He regaled me with tales of eclipse chasers who had seen only a single eclipse out of a dozen attempts, and he had fully expected the casino would be jammed during the entire cruise.

"I wasn't sufficiently skeptical," he sighed. "I didn't realize eclipse chasers spend all their time attending lectures and watching stars."

The professor then said he regretted what had happened to me at *Scientific American;* I was only slightly surprised by this, for several other passengers had expressed similar sentiments. But I was embarrassed when he asked me if I had read Gardner's piece in the SKEPTICAL INQUIRER.

"I hope you were able to separate the fact from the fiction!" I blurted out.

"What do you mean?" he asked.

"Well," I responded, "he said I live in a village, which isn't even true, and then he attempted to portray me as the village idiot. He didn't even get my age right!"

The professor suggested that I cool down and then asked me to be more specific.

"Gardner claimed I said Eve had no hair since she was the product of instant creation," I responded. "That's fiction; I said nothing of the kind!"

The portly professor chuckled and said, "Well, I don't have any hair, and I'm certainly not the product of instant creation! Martin writes both fact and fiction; apparently he did a little of both in your case."

"To say the least," I agreed. "Since he advised me to take a geology course, I should advise him to take a course in ethical journalism!"

Array then asked if I told Gardner that Adam and Eve had no navels. I told him yes, but in the context of the old riddle about the only difference between Adam and Eve and everyone

else. The professor rolled his eyes and mumbled something about Gardner taking navels very seriously. He then asked if I discussed science with Gardner during our two-hour conversation.

"Repeatedly," I answered. "But each time I mentioned fossils, ozone, biology, or *any* science topic, he recoiled and said, 'Don't talk about science!' "

"That's definitely Martin," sighed the professor.

"There's more," I added. "Gardner said, 'Science is almost a religion.' When I asked to whom I should send tithes at *Scientific American*, he ordered, 'Don't quote me on that!' "

The professor smiled and asked to see my palmtop computer. "Mind if I type you a note?" he asked. Before I could answer, he began poking at the keys with two stubby fingers. Half a minute later he said, "Promise you won't read this until the cruise is over. Now how about showing me the instruments you brought along?"

Thanks to Professor Array and a spectacular eclipse, I forgot about Gardner's column and enjoyed the remainder of the cruise. A few weeks later, I was in a library working on a paper about the eclipse when I noticed the professor's file in the directory of my computer. I punched in PROARRAY.RX, and this message flashed on the screen:

> For relief from an attack of the Martin Gardner bug, take *Scientific American*, call 235/5/132, and find Martin's secret mantra. Henceforth your only symptom will be a chuckle each time you see his name. Your closet-creationist friend, R. X. Array.

It was time for a break, so I found a librarian who led me to the bound copies of *Scientific American*.

"This is what you're looking for," she said, handing me volume 235 before vanishing down an isle. I placed the book on a table, and it fell open at Martin Gardner's "Mathematical Games" column on page 132 of issue number 5. The column included an account of a sensuous dance by the famous Dr. Matrix's Eurasian daughter, Iva, wearing only a pentagonal mirror in her navel. Professor Array was right about Gardner and navels.

Finally I arrived at the point where Iva gave Gardner his secret mantra: *Ohwa-taboo-biam.* In the column, Gardner figured out its meaning after a couple of cocktails. The only trip I needed was the one down in the elevator. By the time it reached the third floor, I was laughing so hard that the librarian, who was on the elevator, politely held a finger to her lips. As she exited at the second floor, she turned and whispered, "It's impossible to take Martin Gardner seriously after you learn his secret mantra!"

Stunned, I tried to read her pentagonal nametag, but it was so shiny it dazzled my eyes. Just before the doors closed, she giggled and handed me a folded card which read: *Wewhula-flastl-afbest.* Indeed! As I left the library, her message cycled through my mind: *Wewhula-flastl-afbest . . . Wewhula-flastl-afbest . . . Wewhula-flastl-afbest. . . .*

* * *

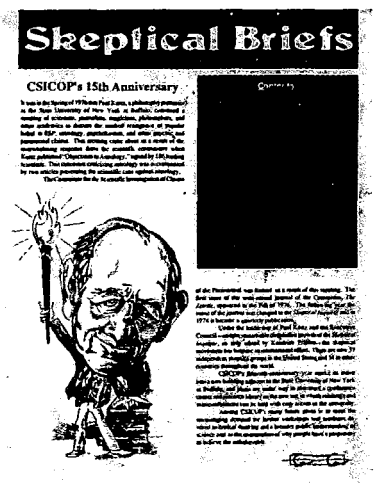
☐ *Martin Gardner Replies*

I am pleased to see Mims confirming the fact that he told me Adam and Eve had no navels. It makes sense because he has since asured me that Adam was created from the dust of the earth, as described in Genesis, and that Eve was fashioned from Adam's rib.

I apologize for two terrible errors: I called Seguin, Texas, a village when apparently it is a town, and I gave Mims's age as 47 when, he tells me, it was 46 at the time. The *Washington Post* (November 1, 1990), in its account of the Mims fracas, gave his age as 47.

There is a false statement in Mims's article. He says I wrote in my *SI* column that he told me Eve was bald. I said nothing of the kind. What I said was, "He [Mims] was not sure whether Eve had hair." After Mims told me Eve had no navel, I asked if she had hair. Mims did not answer. I asked this because hair, like fingernails and many other parts of the human body, bears evidence (like tree rings) of past events. If Eve was created all at once, many parts of her body, aside from a navel, would record past events that never happened.

Mims may consider all this a joke at which he laughs last. To me, even funnier is the fact that a handsome new science magazine, *Science Probe!* is being edited by Mims, a Southern Baptist fundamentalist who believes that our earliest ancestors had no parents. ■



The CSICOP Newsletter

Skeptical Briefs is the quarterly newsletter of the Committee for the Scientific Investigation of Claims of the Paranormal, published to inform skeptics about CSICOP activities and the pursuits of independent local and national skeptics organizations.

You'll find regular columns, such as "Inside CSICOP," "Who's Who in CSICOP?" and news and views not often found in the SKEPTICAL INQUIRER. (Published quarterly, in February, May, August, and November.)

Fill out this coupon and send it with your payment to: **Skeptical Briefs, P.O. Box 703, Buffalo, NY 14226-0703**

☐ *1 yr. $15* ☐ *2 yrs. $28* ☐ *3 yrs. $35*

☐ Check enclosed

☐ *Charge my* ☐ VISA ☐ MasterCard

#_____

Exp. _____

Name _____

Address _____

City _____

State _____ Zip _____

The Skeptical Inquirer . . .

The perfect gift for relatives and friends.

SAVE UP TO 30%

$25.00 for first one-year gift subscription

1. _____
NAME please print

_____
ADDRESS

_____
CITY STATE ZIP

only $18.75 for second one-year gift subscription (25% savings)

2. _____
NAME please print

_____
ADDRESS

_____
CITY STATE ZIP

only $17.50 for each additional gift hereafter (30% savings)

3. _____
NAME please print

_____
ADDRESS

_____
CITY STATE ZIP

A gift card will be sent in your name.

_____
YOUR NAME please print

_____
ADDRESS

_____
CITY STATE ZIP

Order toll-free 800-634-1610

Include my own subscription for:
1 year ($25.00) ☐ 2 years ($43.00) ☐ 3 years ($59.00) ☐

Charge my ☐ Visa ☐ MasterCard

#_____ Exp. _____

Signature_____

☐ Check enclosed ☐ Bill me Total $ _____

(Outside the U.S., please pay in U.S. funds drawn on a U.S. bank. If you live outside North America and would like airmail, add $16.00 a year.

Mail to: **Skeptical Inquirer • Box 229**
Buffalo, New York 14215-0229

Forum

Quantum Confusion (Trevor's Travail)

CONNIE L. SCHMIDT

I have a friend—let's call him Trevor. He confessed to me one day that he had tried to date-rape his own anima; and he'd slapped his inner child around, too, because the kid wouldn't stop whining. "But it turns out that none of this was my fault," Trevor explained. "I went to a hypnotherapist, who regressed me, and we found out that in every one of my lifetimes, including the present one, I've been disempowered by a dysfunctional, abusive family, and that I've been further disenfranchised by the mechanistic Western worldview of modern science."

"Yeah, there's a lot of that going around," I said sympathetically.

Around the same time that Trevor visited the therapist, he read a book called *Currents of Death*, which he picked up because he's a sailing buff and he thought the book was a tale of tragedy at sea; but instead it turned out to be an exposé of the sinister phenomenon of electro-pollution (knowledge of which Big Business is conspiring to keep from us, of course). Now he credits the book with saving his life, and he further credits Divine Guidance for making him pick up the book by mistake. "Wow, talk about synchronicity," he said to me in a reverent whisper. The book helped him realize that he had been virtually incapacitated by continuous exposure to low-level electromagnetic fields, which reversed his bio-polarities and created an imbalance in his chakras. "So I finally decided to take back my power," he declared.

"What do you mean?" I asked, puzzled. "I thought power lines and such were the problem in the first place."

"No, I mean my intrinsic power to manifest my own wellness," he said. First he got rid of his computer and his television and his microwave oven. And then he quit his job and sued his former employer for exposing him to all that office-equipment radiation. He tried to make a living as an Intuitive Counselor, which didn't net him much money. But, he says, "I'm comfortable with that. I'm at peace with it. The incredible thing is that I've learned how to draw on the natural altruism of others." Altruism, in this case, translates into a lot of free stuff for Trevor. People give him food and clothes and a place to stay, and in return he gives them a free "reading," for which he would normally charge $150 for a 30-minute session. Trevor's little New Age clique is creating its own cashless society, a world of trade-offs in which the currency consists of "treatments" or "readings."

"Do treatments and readings pay the utility bills?" I asked Trevor.

He laughed gently. "Oh Connie,

you're so mundane sometimes," he said. "My friends and I have learned to trust that the universe will support us, and it does."

Anyway, after all those years of exposing himself to the hazards of making a legitimate living, Trevor needed to get his energies cleared and balanced. "So I began to undergo intensive body-work therapy, which included crystal healing, various vibrational techniques, cranial-sacral optimization, and oversoul energy transfer," he said. "Oh, yeah, and colonic irrigation too."

But he still had work to do on his psyche. "Fortunately, I was guided to a 12-step program, where I came into contact with others who suffered from the same disorder I had."

Having been over the 12-step route myself, I'm pretty familiar with this sort of disorder; it's a type of emotional binge-purge syndrome that causes its sufferers to stuff themselves for hours on clichés and other folks' tales of abuse, after which they vomit up their own tales of abuse and even more clichés.

"The Program," as Trevor learned to dutifully call it, was very helpful, and each morning and evening he got down on his knees and thanked a Power greater than himself for it. But he almost contracted lung cancer by breathing all the secondhand smoke in the 12-step meeting room; so he bought a subliminal tape that helped him create affirmations to negate the effects of the cigarette smoke. Proceeds from the sale of the tape, he told me, went to an organization that saves rain-forest dolphins from post-traumatic stress syndrome, or something like that. At any rate, it's a real good cause.

But the turning point for Trevor was when he went to Boulder, Colorado, for a weeklong motivational seminar on Optimal Mindfulness—or

maybe it was Networking Excellence. Anyway, during that seminar he had a vision that prompted him to embark on a shamanistic journey into the Southwestern desert, where he met up with the hero within, who beat the hell out of him. But after that they went out for drinks, and his hero led him to a larger awareness of transpersonal realities, and then Trevor went on one of those Men's Weekends and discovered his own inner wild man, who, as it happens, is naked. And now my friend is a new person, or group of people, one of whom better be careful lest he get arrested for indecent exposure. I'd keep the wild man away from the inner child, too, just to be safe; I can't help remembering the cockpit scene, with the pilot

and the little boy, in the movie *Airplane.* Anyhow, Trevor is grateful to have experienced, as he so eloquently puts it, "the healing and transformative powers that can only come with the emerging paradigm of global mind-change and quantum consciousness" (I couldn't have put it better myself). And now my friend Trevor, this survivor of a toxic childhood, this adult child of an alcoholic absent father, is doing his dream and writing a book about it, from which he plans to create—yes, you guessed it—a seminar.

We were talking about all this, and he told me what a good friend I've been to him and what a highly evolved being he senses I am; and then he looked at me for a long, intense moment and said, "Connie, thank you for being in the universe."

I lowered my eyes and said modestly, "Really, it was nothing. I know you'd do the same for me."

Trevor is doing okay these days. His only problem is that, while trying to create his own reality, he ended up making a big mess, the way he does with all his home projects; and he still had to call in a professional.

While Trevor has been doing all his personal growth work, I've been dealing with my own inner turmoil. Trevor told me I should figure out what my core issues are, and then ask the universe for guidance. I said, "Oh, but I couldn't. I get shy speaking before a crowd."

One of the things I'm worried about is what I'm going to do on January 11, 1992. In case you don't know the significance of January 11, 1992, that's when the universe will be expanding into dimensions never before experienced—I read this in one of those magazines that uses words like *positive* and *healthy* and *inspire* in its statement of purpose, so I know it's true. Anyway, according to this magazine, on January 11 all individuals who have sufficiently attuned themselves to a clear and focused mind-set will have the opportunity to experience the seventh dimension. I don't think this necessarily means they'll be spirited away (so to speak), or if they are, I doubt if it will be anything permanent; probably it'll just be a day trip. They'll be back in time for supper. Maybe it's like a Rapture Lite. Trevor says he's "psyched and ready." As for me, I'm getting the hell out of the way. I'm running for cover, the way I did during the Harmonic Convergence, when I stayed in my office, crouching under my desk next to the laser printer and soaking in low-level radiation until it was all over. Seventh dimension? No, thanks. I have enough work to do screwing things up in just three dimensions.

Connie L. Schmidt is a freelance writer in Houston. She says she supposes she's a spiritual humanist (or humorist). "I'm still hanging around that shadowland between belief and disbelief. But there's a lot of light in shadowland, and it is a natural light that can only exist in a world where things like skepticism and reason and ambiguity—along with a healthy dose of humor and irreverence—are allowed to flourish."

* * *

Skepticism and Environmental Education

BRYAN NICHOLS

It has been noted often in the past few years that American education is woefully inadequate; instead of stimulating and informing the nation's children, it not only fails to inform them of even basic scientific tenets but actually drives them away from the sciences. I have been working in the field of environmental education (EE) for the past few years, most recently and notably in Yosemite National Park. The potential that EE has to kindle a sense of wonder and curiosity in students of all ages, to pull them from dry and tedious textbooks out into the natural world, is considerable. Yet EE has a long way to go before it shakes many of the ills that plague public education—inadequate funding, poor facilities, and minimal attendance by all but well-off children.

Unfortunately, from what I have seen, science itself is inadequately understood and poorly taught by many environmental educators, and many "green" pseudoscientific ideas are seldom questioned. If EE is to meet its full potential in both stimulating students' interest in science and the natural world, in addition to helping "save the planet," its administrators and teachers must have a better understanding of what science really means.

The stereotypical model of a long-haired surfer or feminist in earth tones leading children through the forest and preaching vegetarianism continues to plague EE; I have to admit that although I'm not a vegetarian I look a bit like a surfer myself. Appearances however, are not the problem. The often rustic living conditions and invariably low pay are not going to attract yuppie teachers in suits. What is a problem are the pseudoscientific beliefs that are prevalent among environmentalists, and all too often an inadequate understanding of the basics of science.

In observing and talking to other instructors and environmentalists, I have heard a number of dubious beliefs raised repeatedly. Mysterious herbal remedies and a host of New Age nonsense have strong followings. "Scientific" studies, such as the Hundredth Monkey theory, are presented to children as a reason to

"spread the word." The Gaia theory of an ecologically unified planet is often stretched into a sort of bizarre idea of a conscious earth. Why mislead students with this sort of nonsense?

Two extremely important tenets of most prehistoric Native American values—that of harmony with nature and a strong concern for future effects of current actions—are lessons that our modern society needs to learn. Unfortunately, these simple philosophical beliefs are repeatedly lost in the mishmash that has become our version of Native American culture, with myths, legends, quotations, and ceremonies of dubious origin and content often detracting from the simple fact that most ancient American cultures were far more self-sustaining and far less destructive than our own.

Regrettably, EE too often reminds me of organized religion. Instructors too focused on supposedly saving the planet preach the latest dos and don'ts—that is, what is politically correct (or "PC," as they say in Berkeley)—without teaching students to make their own decisions. Attitudes are too often negative, and laying down tirades of ecoguilt on students merely puts many of them off. They then write off their instructors as depressing weirdos.

To improve the situation, the scientific method needs to be formally reviewed with all environmental educators. Curricula that highlight critical and creative thought as an answer to the earth's ecological problems should be stressed—blatant advocacy for or against specific organizations should be discouraged. It is far more valuable to teach students how to make well-informed decisions about their own lifestyles than to dictate how they should live.

I am impressed with the attention that the SKEPTICAL INQUIRER is devoting to the education, or lack thereof, of America's youth. In the interests of reaching the educators who work with the goal of saving the earth in mind, I hope to see more focus on ecology-related pseudoscience and would welcome any input from *SI* writers or readers on how to encourage rational and logical thought while teaching in the great outdoors.

Bryan Nichols has a degree in marine biology and is an environmental educator in Yosemite National Park. He likes "critical thinking, creative thought, and good debates" as much as "hiking beautiful mountain trails and scuba diving coral reefs."

Fill in the gaps in your

SKEPTICAL INQUIRER

collection

15% discount on orders of $100 or more

($6.25 for each copy. To order, use reply card insert.)

FALL 1991 (vol. 16, no. 1): Near-death experiences, *Blackmore.* Multicultural pseudoscience: Spreading scientific illiteracy, Part 1, *De Montellano.* Science and commonsense skepticism, *Aach.* Spook Hill, *Wilder.* Lucian and Alexander, *Rowe.* 1991 CSICOP conference, *Shore* and *Frazier.* Reeder feedback from Urantia to Titanic, *Gardner.*

SUMMER 1991 (vol. 15, no. 4): Lucid dreams, *Blackmore.* Nature faking in the humanities, *Gallo.* Carrying the war into the never-never land of psi: Part 2, *Gill.* Coincidences, *Paulos.* Locating invisible buildings, *Plummer.* True believers, *Bower.* Cal Thomas, the big bang, and Forrest Mims, *Gardner.*

SPRING 1991 (vol. 15, no. 3): Special report: Hi-fi pseudoscience, *Davis.* Searching for extraterrestrial intelligence: An interview with *Thomas R. McDonough.* Getting smart about getting smarts, *Faulkes.* Carrying the war into the never-never land of psi: Part 1, *Gill.* Satanic cult 'survivor' stories, *Victor.* 'Old-solved mysteries': The Kecksburg incident, *Young.* Penn & Teller, the magical iconoclasts, *Gordon.* Magic, medicine, and metaphysics in Nigeria, *Roder.* What's wrong with science education? Look at the family, *Eve.* Three curious research projects, *Gardner.*

WINTER 1991 (vol. 15, no. 2): Special report / Gallup poll: Belief in paranormal phenomena, *Gallup and Newport.* Science and self-government, *Piel.* West Bank collective hysteria episode, *Stewart.* Acceptance of personality test results, *Thiriart.* Belief in astrology: A test of the Barnum effect, *French, Fowler, McCarthy, and Peers.* A test of clairvoyance using signal-detection, *McKelvie and Gagné.* Intercessory prayer as medical treatment? *Wittmer and Zimmerman.* Tipler's Omega Point theory, *Martin Gardner.*

FALL 1990 (vol. 15, no. 1): Neural Organization Technique: Treatment or torture, *Worrall.* The spooks of quantum mechanics, *Stenger.* Science and Sir William Crookes, *Hoffmaster.* The 'N' machine, *Cumming.* Biological cycles and rhythms vs. biorhythms, *Wheeler.* The mysterious finger-lift levitation, Gardner. 1990 CSICOP Conference.

SUMMER 1990 (vol. 14, no. 4): Ghosts make news: How four newspapers report psychic phenomena, *Klare.* Thinking critically and creatively, *Wade and Tavris.* Police pursuit of satanic crime, Part 2, *Hicks.* Order out of chaos in survival research, *Berger.* Piltdown, paradigms, and the paranormal, *Feder.* Auras: Searching for the light, *Loftin.* Biorhythms and the timing of death, *Lester.* Relativism in science, *Gardner.*

SPRING 1990 (vol. 14, no. 3): Why we need to understand science, *Sagan.* The crisis in pre-college science and math education, *Seaborg.* Police pursuit of satanic crime, Part 1, *Hicks.* The spread of satanic-cult rumors, *Victor.* Lying about polygraph tests, *Shneour.* Worldwide disasters and moon phase, *Kelly, Saklofske, and Culver.* St. George and the dragon of creationism, *Gardner.*

WINTER 1990 (vol. 14, no. 2): The new catastrophism, *Morrison and Chapman.* A field guide to critical thinking, *Lett.* Cold fusion: A case history in 'wishful science'? *Rothman.* The airship hysteria of 1896-97, *Bartholomew.* Newspaper editors and the creation-evolution controversy, *Zimmerman.* Special report: New evidence of MJ-12 hoax, *Klass.* The great Urantia mystery, *Gardner.*

FALL 1989 (vol. 14, no. 1): Myths about science, *Rothman.* The relativity of wrong, *Asimov.* Richard Feynman on fringe science. Luis Alvarez and the explorer's quest, *Muller.* The two cultures, *Jones.* The 'top-secret UFO papers' NSA *won't* release, *Klass.* The metaphysics of Murphy's Law, *Price.* The Unicorn at large, Gardner.

SUMMER 1989 (vol. 13, no. 4): The New Age—An Examination: The New Age in perspective, *Kurtz.* A New Age reflection in the magic mirror of science, *O'Hara.* The New Age: The need for myth in an age of science, *Schultz.* Channeling, *Alcock.* The psychology of channeling, *Reed,* 'Entities' in the linguistic minefield, *Thomason.* Crystals, *Lawrence.* Consumer culture and the New Age, *Rosen.* The Shirley MacLaine phenomenon, *Gordon.* Special report: California court jails psychic surgeon, *Brenneman.*

SPRING 1989 (vol. 13, no. 3): High school biology teachers and pseudoscientific belief, *Eve and Dunn.* Evidence for Bigfoot? *Dennett.* Alleged pore structure in Sasquatch footprints, *Freeland and Rowe.* The lore of levitation, *Stein.* Levitation 'miracles' in India, *Premanand.* Science, pseudoscience, and the cloth of Turin, *Nickell.* Rather than just debunking, encourage people to think, *Seckel.* MJ-12 papers 'authenticated'? *Klass.* A patently false patent myth, *Sass.*

WINTER 1989 (vol. 13, no. 2): Special report: The 'remembering water' controversy, *Gardner and Randi;* Bibliographic guide to the 'dilution controversy.' Pathologies of science, precognition, and modern psychophysics, *Jensen.* A reaction-time test of ESP and precognition, *Hines and Dennison.* Chinese psychic's pill-bottle demonstration, *Wu Xiaoping.* The Kirlian technique, *Watkins and Bickel.* Certainty and proof in creationist thought, *Leferriére.*

FALL 1988 (vol. 13, no. 1): Special report: Astrology and the presidency, *Kurtz* and *Bob.* Improving Human Performance: What about parapsychology? *Frazier.* The China syndrome: Further reflections on the paranormal in China, *Kurtz.* Backward masking, *McIver.* The validity of graphological analysis, *Furnham.* The intellectual revolt against science, *Grove.* Reich the rainmaker, *Gardner.*

SUMMER 1988 (vol. 12, no. 4): Testing psi claims in China, *Kurtz, Alcock, Frazier, Karr, Klass, and Randi.* The appeal of the occult: Some thoughts on history, religion, and science, *Stevens.* Hypnosis and reincarnation, *Venn.* Pitfalls of perception, *Wheeler.* Wegener and pseudoscience: Some misconceptions, *Edelman.* An investigation of psychic crime-busting, *Emery.* High-flying health quackery, *Hines.* The bar-code beast,

(continued on next page)

Keith. Occam's Razor and the nutshell earth, *Gardner.*

SPRING 1988 (vol. 12, no. 3): Neuropathology and the legacy of spiritual possession, *Beyerstein.* Varieties of alien experience, *Ellis.* Alien-abduction claims and standards of inquiry (excerpts from Milton Rosenberg's radio talk-show with guests Charles Gruder, Martin Orne, and Budd Hopkins). The MJ-12 Papers: Part 2, *Klass.* Doomsday: The May 2000 prediction, *Meeus.* My visit to the Nevada Clinic, *Barrett.* Morphic resonance in silicon chips, *Varela and Letelier.* Abigail's anomalous apparition, *Durm.* The riddle of the Colorado ghost lights, *Bunch and White.* The obligation to disclose fraud, *Gardner.*

WINTER 1987-88 (vol. 12, no. 2): The MJ-12 papers: Part I, *Philip J. Klass.* The aliens among us: Hypnotic regression revisited, *Baker.* The brain and consciousness: Implications for psi, *Beyerstein.* Past-life hypnotic regression, *Spanos.* Fantasizing under hypnosis, *Reveen.* The verdict on creationism, *Gould.* Irving Kristol and the facts of life, *Gardner.*

FALL 1987 (vol. 12, no. 1): The burden of skepticism, *Sagan.* Is there intelligent life on Earth? *Kurtz.* Medical Controversies: Chiropractic, *Jarvis;* Homeopathy, *Barrett, M.D.;* Alternative therapies, *Jones;* Quackery, *Pepper.* Catching Geller in the act, *Emery.* The third eye, *Gardner.* Special Report: CSICOP's 1987 conference.

SUMMER 1987 (vol. 11, no. 4): Incredible cremations: Investigating combustion deaths, *Nickell and Fischer.* Subliminal deception, *Creed.* Past tongues remembered? *Thomason.* Is the universe improbable? *Shotwell.* Psychics, computers, and psychic computers, *Easton.* Pseudoscience and children's fantasies, *Evans.* Thoughts on science and superstrings, *Gardner.* Special Reports: JAL pilot's UFO report, *Klass;* Unmasking psychic Jason Michaels, *Busch.*

SPRING 1987 (vol. 11, no. 3): The elusive open mind: Ten years of negative research in parapsychology, *Blackmore.* Does astrology need to be true? Part 2: The answer is no, *Dean.* Magic, science, and metascience: Some notes on perception, *D. Sagan.* Velikovsky's interpretation of the evidence offered by China, *Lo.* Anomalies of Chip Arp, *Gardner.*

WINTER 1986-87 (vol. 11, no. 2): Case study of West Pittston 'haunted' house, *Kurtz.* Science, creationism and the Supreme Court, *Seckel,* with statements by *Ayala, Gould,* and *Gell-Mann.* The great East Coast UFO of August 1986, *Oberg.* Does astrology need to be true? Part 1, *Dean.* Homing abilities of bees, cats, and people, *Randi.* The EPR paradox and Rupert Sheldrake, *Gardner.* Followups: On fringe literature, *Bauer;* on Martin Gardner and Daniel Home, *Beloff.*

FALL 1986 (vol. 11, no. 1): The path ahead: Opportunities, challenges, and an expanded view, *Frazier.* Exposing the faith-healers, *Steiner.* Was Antarctica mapped by the ancients? *Jolly.* Folk remedies and human belief-systems, *Reuter.* Dentistry and pseudoscience, *Dodes.* Atmospheric electricity, ions, and pseudoscience, *Dolezalek.* Noah's ark and ancient astronauts, *Harrold and Eve.* The Woodbridge UFO incident, *Ridpath.* How to bust a ghost, *Baker.* The unorthodox conjectures of Tommy Gold, *Gardner.*

SUMMER 1986 (vol. 10, no. 4): Occam's razor, *Shneour.* Clever Hans redivivus, *Sebeok.* Parapsychology miracles, and repeatability, *Flew.* The Condon UFO study, *Klass.* Four decades of fringe literature, *Dutch.* Some remote-viewing recollections, *Weinberg.* Science, mysteries, and the quest for evidence, *Gardner.*

SPRING 1986 (vol. 10, no. 3): The perennial fringe, *Asimov.* The uses of credulity, *de Camp.* Night walkers and mystery mongers, *Sagan.* CSICOP after ten years, *Kurtz.* Crash of the crashed-saucers claim, *Klass.* A study of the Kirlian effect, *Watkins and Bickel.* Ancient tales and space-age myths of creationist evangelism, *McIver.* Creationism's debt to George McCready Price, *Gardner.*

WINTER 1985-86 (vol. 10, no. 2): The moon was full and nothing happened, *Kelly, Rotton, and Culver.* Psychic studies: The Soviet dilemma, *Ebon.* The psychopathology of fringe medicine, *Sabbagh.* Computers and rational thought, *Spangenburg and Moser.* Psi researchers' inattention to conjuring, *Gardner.*

FALL 1985 (vol. 10, no. 1): Investigations of firewalking, *Leikind and McCarthy.* Firewalking: reality or illusion, *Dennett.* Myth of alpha consciousness, *Beyerstein.* Spirit-rapping unmasked, *V. Bullough.* The Saguaro incident, *Taylor and Dennett.* The great stone face, *Gardner.*

SUMMER 1985 (vol. 9, no. 4): Guardian astrology study, *Dean, Kelly, Rotton, and Saklofske.* Astrology and the commodity market, *Rotton.* The hundredth monkey phenomenon, *Amundson.* Responsibilities of the media, *Kurtz.* 'Lucy' out of context, *Albert.* The debunking club, *Gardner.*

SPRING 1985 (vol. 9, no. 3): Columbus poltergeist: I, *Randi.* Moon and murder in Cleveland, *Sanduleak.* Image of Guadalupe, *Nickell and Fischer.* Radar UFOs, *Klass.* Phrenology, *McCoy.* Deception by patients, *Pankratz.* Communication in nature, *Orstan.* Relevance of belief systems, *Gardner.*

WINTER 1984-85 (vol. 9, no. 2): The muddled 'Mind Race,' *Hyman.* Searches for the Loch Ness monster, *Razdan and Kielar.* Final interview with Milbourne Christopher, *Dennett.* Retest of astrologer John McCall, *Ianna and Tolbert.* 'Mind Race,' *Gardner.*

FALL 1984 (vol. 9, no. 1): Quantum theory and the paranormal, *Shore.* What is pseudoscience? *Bunge.* The new philosophy of science and the 'paranormal,' *Toulmin.* An eye-opening double encounter, *Martin.* Similarities between identical twins and between unrelated people, *Wyatt et al.* Effectiveness of a reading program on paranormal belief, *Woods,* Pseudoscientific beliefs of 6th-graders, *A. S. and S. J. Adelman.* Koestler money down the psi-drain, *Gardner.*

SUMMER 1984 (vol. 8, no. 4): Parapsychology's past eight years, *Alcock.* The evidence for ESP, *C. E. M. Hansel.* $110,000 dowsing challenge, *Randi.* Sir Oliver Lodge and the spiritualists, *Hoffmaster.* Misperception, folk belief, and the occult, *Connor.* Psychology and UFOs, *Simón.* Freud and Fliess, *Gardner.*

SPRING 1984 (vol. 8, no. 3): Belief in the paranormal worldwide: Mexico, *Mendez-Acosta;* Netherlands, *Hoebens;* U.K., *Hutchinson;* Australia, *Smith;* Canada, *Gordon;* France, *Rouzé.* Debunking, neutrality, and skepticism in science, *Kurtz.* University course reduces paranormal belief, *Gray.* The Gribbin effect, *Roder.* Proving negatives, *Pasquarello.* MacLaine, McTaggart, and McPherson, *Gardner.*

WINTER 1983-84 (vol. 8, no. 2): Sense and nonsense in parapsychology, *Hoebens.* Magicians, scientists, and psychics, *Ganoe and Kirwan.* New dowsing experiment, *Martin.* The effect of TM on weather, *Trumpy.* The haunting of the Ivan Vassilli, *Sheaffer.* Venus and Veli-

kovsky, *Forrest.* Magicians in the psi lab, *Gardner.*

FALL 1983 (vol. 8, no. 1): Creationist pseudoscience, *Schadewald.* Project Alpha: Part 2, *Randi.* Forecasting radio quality by the planets, *Dean.* Reduction in paranormal belief in college course, *Tobacyk.* Humanistic astrology, *Kelly and Krutzen.*

SUMMER 1983 (vol. 7, no. 4): Project Alpha: Part 1, *Randi.* Goodman's 'American Genesis,' *Feder.* Battling on the airwaves, *Slavsky.* Rhode Island UFO film, *Emery.* Landmark PK hoax, *Gardner.*

SPRING 1983 (vol. 7, no. 3): Iridology, *Worrall.* The Nazca drawings revisited, *Nickell. People's Almanac* predictions, *Donnelly.* Test of numerology, *Dlhopolsky.* Pseudoscience in the name of the university, *Lederer and Singer.*

WINTER 1982-83 (vol. 7, no. 2): Palmistry, *Park.* The great SRI die mystery, *Gardner.* The 'monster' tree-trunk of Loch Ness, *Campbell.* UFOs and the not-so-friendly skies, *Klass.* In defense of skepticism, *Reber.*

FALL 1982 (vol. 7, no. 1): The prophecies of Nostradamus, *Cazeau.* Prophet of all seasons, *James Randi.* Revival of Nostradamitis, *Hoebens.* Unsolved mysteries and extraordinary phenomena, *Gill.* Clearing the air about psi, *Randi.* A skotography scam, *Randi.*

SUMMER 1982 (vol. 6, no. 4): Remote-viewing, *Marks.* Radio disturbances and planetary positions, *Meeus.* Divining in Australia, *Smith.* "Great Lakes Triangle," *Cena.* Skepticism, closed-mindedness, and science fiction, *Beyerstein.* Followup on ESP logic, *Hardin and Morris* and *Gendin.*

SPRING 1982 (vol. 6, no. 3): The Shroud of Turin, *Mueller.* Shroud image, *McCrone.* Science, the public, and the Shroud, *Schafersman.* Zodiac and personality, *Gauquelin.* Followup on quantum PK, *Hansel.*

WINTER 1981-82 (vol. 6, no. 2): On coincidences, *Ruma Falk.* Croiset: Part 2, *Hoebens.* Scientific creationism, *Schadewald.* Follow-up on 'Mars effect,' *Rawlins,* responses by *CSICOP Council* and *Abell and Kurtz.*

FALL 1981 (vol. 6, no. 1): Gerard Croiset: Part 1, *Hoebens.* Test of perceived horoscope accuracy, *Lackey.* Planetary positions and radio propagation, *Ianna and Margolin.* Bermuda Triangle, 1981, *Dennett.* Observation of a psychic, *McIntyre.*

SUMMER 1981 (vol. 5, no. 4): Investigation of 'psychics,' *Randi.* ESP: A conceptual analysis, *Gendin.* The extroversion-introversion astrological effect, *Kelly and Saklofske.* Art, science, and paranormalism, *Habercom.* Profitable nightmare, *Wells.* A Maltese cross in the Aegean? *Loftin.*

SPRING 1981 (vol. 5, no. 3): Hypnosis and UFO abductions, *Klass.* Hypnosis not a truth serum, *Hilgard.* H. Schmidt's PK experiments, *Hansel.* Further comments on Schmidt's experiments, *Hyman.* Atlantean road, *Randi.* Deciphering ancient America, *McKusick.* A sense of the ridiculous, *Lord.*

WINTER 1980-81 (vol. 5, no. 2): Fooling some people all the time, *Singer and Benassi.* Recent perpetual motion developments, *Schadewald.* National Enquirer astrology study, *Mechler, McDaniel, and Mulloy.* Science and the mountain peak, *Asimov.*

FALL 1980 (vol. 5, no. 1): The Velikovsky affair — articles *by Oberg, Bauer, Frazier.* Academia and the occult, *Greenwell.* Belief in ESP among psychologists, *Padgett, Benassi, and Singer.* Bigfoot on the loose, *Kurtz.* Parental expectations of miracles, *Steiner.* Downfall of a would-be psychic, *McBurney and Greenberg.* Parapsychology research, *Mishlove.*

SUMMER 1980 (vol. 4, no. 4): Superstitions, *Bainbridge and Stark.* Psychic archaeology, *Feder.* Voice stress analysis, *Klass.* Follow-up on the 'Mars effect,' Evolution vs. creationism, and the Cottrell tests.

SPRING 1980 (vol. 4, no. 3): Belief in ESP, *Morris.* UFO hoax, *Simpson.* Don Juan vs. Piltdown man, *de Mille.* Tiptoeing beyond Darwin, *Greenwell.* Conjurors and the psi scene, *Randi.* Follow-up on the Cottrell tests.

WINTER 1979-80 (vol. 4, no. 2): The 'Mars effect' — articles *by Kurtz, Zelen, and Abell; Rawlins; Michel and Françoise Gauquelin.* How I was debunked, *Hoebens.* The metal bending of Professor Taylor, *Gardner.* Science, intuition, and ESP, *Bauslaugh.*

FALL 1979 (vol. 4, no. 1): A test of dowsing, *Randi.* Science and evolution, *Godfrey.* Television pseudo-documentaries, *Bainbridge.* New disciples of the paranormal, *Kurtz.* UFO or UAA, *Standen.* The lost panda, *van Kampen.* Edgar Cayce, *Randi.*

SUMMER 1979 (vol. 3, no. 4): The moon and the birthrate, *Abell and Greenspan.* Biorhythms, *Hines.* 'Cold reading,' *Randi.* Teacher, student, and the paranormal, *Kral.* Encounter with a sorcerer, *Sack.*

SPRING 1979 (vol. 3, no. 3): Near-death experiences, *Alcock.* Television tests of Musuaki Kiyota, *Scott and Hutchinson.* The conversion of J. Allen Hynek, *Klass.* Asimov's corollary, *Asimov.*

WINTER 1978-79 (vol. 3, no. 2): Is parapsychology a science? *Kurtz.* Chariots of the gullible, *Bainbridge.* The Tunguska event, *Oberg.* Space travel in Bronze Age China, *Keightley.*

FALL 1978 (vol. 3, no. 1): An empirical test of astrology, *Bastedo.* Astronauts and UFOs, *Oberg.* Sleight of tongue, *Schwartz.* The Sirius "mystery," *Ridpath.*

SPRING/SUMMER 1978 (vol. 2, no. 2): Tests of three psychics, *Randi.* Biorhythms, *Bainbridge.* Plant perception, *Kmetz.* Anthropology beyond the fringe, *Cole.* NASA and UFOs, *Klass.* A second Einstein ESP letter, *Gardner.*

FALL/WINTER 1977 (vol. 2, no. 1): Von Däniken, *Story,* The Bermuda Triangle, *Kusche.* Pseudoscience at Science Digest, *Oberg and Sheaffer.* Einstein and ESP, *Gardner.* N-rays and UFOs, *Klass.* Secrets of the psychics, *Rawlins.*

SPRING/SUMMER 1977 (vol. 1, no. 2): Uri Geller, *Marks and Kammann.* Cold reading, *Hyman.* Transcendental Meditation, *Woodrum.* A statistical test of astrology, *McGervey.* Cattle mutilations, *Stewart.*

FALL/WINTER 1976 (vol. 1, no. 1): Dianetics, *Wallis.* Psychics and clairvoyance, *Fine.* "Objections to Astrology," *Westrum.* Astronomers and astrophysicists as astrology critics, *Kurtz and Nisbet.* Biorhythms and sports, *Fix.* Von Däniken's chariots, *Omohundro.*

Letters to the Editor

Archaeological 'dowsing'?

I was fascinated to read Mark Plummer's article regarding Karen Hunt and her archaeological dowsing ("Locating Invisible Buildings," *SI*, Summer 1991).

I've met Hunt several times in my capacity as a professional archaeologist. At our first meeting, at a conference in April 1983, she spoke at length to a colleague of mine who had just presented a paper that touched upon archaeological reconnaissance strategies. That was when I first became acquainted with her rather remarkable assertions regarding EMPFs (electromagnetic photofields). She informed us that, with her divining rods, she could not only find a building site and produce a detailed floorplan, but that with the aid of a cherrypicker gantry she could also determine the height of the vanished structure's roof, the location and size of windows, and so forth. I admitted I could not understand how this was possible; I was answered by her turning her back upon me and addressing herself solely to my friend.

We never again had occasion to converse, but it was far from the last time I encountered her theories. She was famous—or infamous—for them. At one time, a senior archaeologist at the Missouri Highway and Transportation Department (where I worked for five years) and I discussed the possibility of having Hunt make preliminary "investigations" using her divining techniques in our project areas. We thought that this would enable us to make an investigation of her claims using conventional archaeological strategies.

Several practical considerations kept this from ever being more than a pipedream, however. For one, it was doubtful that Hunt could be induced to do this for free, and we could not see any way of getting the MHTD to authorize payment. For another, it was conceivable that her involvement in a serious project could result in our report failing to pass review by the Department of Natural Resources, as such methodology is not held to comply with existing federal guidelines for cultural-resources management. Also, we frankly could ill afford the additional time a serious investigation of Hunt's claims would demand.

Plummer's concerns that the economy of Hunt's methods might be appealing are well grounded. However, I find it extremely unlikely that she will be afforded official recognition. The laws governing cultural resources call for fairly rigorous standards, and state historic preservation officers take a decidedly dim view of nonstandard methodology. Any survey results based upon unconventional practice are sure to be questioned, and without compelling evidence of veracity such a survey is bound to be invalidated. It is rather telling that Hunt is not employed to conduct reconnaissance surveys. One cannot credit this to any reticence on her part.

William Brame
Atlanta, Ga.

I enjoyed Mark Plummer's article on Karen Hunt's hunt for invisible buildings. In explaining the physics of electromagnetic waves, the author implied that they are not radiated by buildings: ". . . Any electromagnetic waves emitted by buildings in 1860 (if this were possible) would have passed Alpha Centauri . . . by 1864!" Of course nineteenth-century structures emitted

electromagnetic waves! Everything with a temperature greater than -273.16° C (absolute zero) emits radiation. The thermally agitating atoms and molecules that make up the walls and roof are the transmitters and antennae that release the energy. Unfortunately for Hunt, once the walls and roof (and all the atoms and molecules) are gone from a building, there is no more electromagnetic radiation from it.

M. B. Boslough
Albuquerque, N.M.

Plummer attempts to give the impression that he has done research on the topic of locating the foundations of buildings that are no longer standing. The fact that he makes no mention of a major book on the subject, *Dowsing and Church Archaeology*, by Richard N. Bailey, Eric Cambridge, and H. Denis Briggs (Wimborne, Dorset: Intercept Press, 1988), or of a number of articles in British archaeological journals, forces me to draw one of two conclusions: (1) Plummer's research is inadequate and his article should have been neither accepted nor published by a journal with pretensions to a "scientific" reputation; or (2) Plummer set out to destroy the reputation of a hard-working, devoted historic preservationist and would not include anything that supported her or her work.

Warren E. Roberts
Professor of Folklore
Indiana University
Bloomington, Ind.

Mark Plummer responds:

Warren Roberts has not presented any facts to refute the opinion of physicists who have examined the theoretical basis for Karen Hunt's claims as set out in her thesis.

His sole argument in support of the application of her theories is the citation of a British publication that makes untested claims for dowsing. Hunt has stated in writing that she does not refer to her work as dowsing, so the work cited is irrelevant.

Roberts seems to be Hunt's last supporter in the Indiana University academic community. If he is genuinely interested in a scientific evaluation of her claims, he will accept my challenge to: (1) take Hunt's thesis and my article to independent physicists for a written evaluation of her theories; (2) ask Hunt for the name and address of the electronic expert she mentions in a letter dated March 10, 1984, who she says is developing a machine that bleeps/blinks when encountering "photo fields," and ask him for a written progress report on the machine; (3) Arrange for Hunt to undergo a controlled scientific test of her abilities with a protocol acceptable to all parties.

Hunt is welcome to reply to my article or to provide evidence to support her claims by being tested.

Lucid dreaming

It was with great personal interest that I read Susan Blackmore's article "Lucid Dreaming" (*SI*, Summer 1991). I have long been able to consciously manipulate actions and circumstances while dreaming, but I had no idea that it was an area of serious scientific pursuit or that there was some unfortunate connection with the New Age movement.

The need to practice induction of lucid dreaming as described in her article seemed rather forced. I find that if I pay attention to my thoughts when I fall asleep, no matter what the content, I can engage in a lucid dream with good success. This does require some concentrated effort on my part, consequently I do not attempt it all that often.

Other aspects of this phenomenon discussed in the article were strikingly familiar. One frequent lucid dream I enjoy has to do with flying in some form. For me, this ability more resembles a weightlessness than a Superman-type of flying through space. As an example, this feeling is manifested in dreams when I find I can make a conscious decision to leap off a tall building with a single bound (à la

Superman!), but then descend in a controlled free-fall. Movement within this free-fall is not unlike swimming underwater.

Blackmore's description of repetitive dreams of waking up is another occurrence I have experienced. This particular dream does not seem particularly unusual, as we've all had apprehensive feelings caused by external pressures that carry over into the dream world. I believe this can trigger the frustrating "wake-up dream," particularly if the dreamer wakes up too early and then goes back to sleep.

I look forward to any other publication on this subject, and congratulate the SKEPTICAL INQUIRER for bringing forth such intriguing articles.

Peter L. Steyn
Paterson, N.J.

It seems to me incontrovertible that there are two kinds of dreams: (1) those that are set in the room, indeed, in the bed, in which the dreamer is sleeping, and (2) those that are not. It is, I believe, the former that have come to be called, or should be called, "lucid" dreams. In addition, I think it is an error to leap to the assumption made of the first group that one can "control" them or, for all their reality, that one is conscious while they take place.

From my own experience, one thing seems certain: that is, the response to each kind of dream is different.

Years ago, I had a recurrent dream that, in its simplest form, took place in the bed in which I was dreaming. I would not know, because of the vividness with which the dream replicated my sleeping posture, if I was awake or asleep. I would think: "If I am awake I can prove it by moving." But because I'd be asleep I could not do so. This, in sleep, would frighten me, and I would struggle against the restraining immobility of sleep and awake with a kind of jactitation, my heart pounding. There were subsequent, more horrifying variants of this dream (always with the constant of being abed). The paralysis of sleep causes the fear.

What is frightening about this group of dreams is that one cannot tell if one is dreaming until one wakes. In the other kind of dream, however distorted, somehow one knows one is dreaming even if the question "Am I dreaming?" is not asked. The gratifications that the usual dream supplies are not given in the dreams in group 1. These dreams come too close; they are too naked an invader of our sleep.

Perhaps I have misunderstood or even reversed the definition of lucid dreaming described in the article. It is, however, my contention that what is frightening about what I have called lucid dreams—what makes them not "fun to have"—is that they ask the question "What is real?" This may be an impossible question, an unspeakable question, for a dream.

Morris Glaser
Brooklyn, N.Y.

On coincidences

I read with great interest the article "Coincidences" by John A. Paulos (*SI*, Summer 1991). He deals effectively with the mathematical considerations, but leaves untouched, I think, the important question of what is the true nature of coincidence, at least as that word is commonly used and understood.

Consider an example of the kind of "everyday" coincidence ordinary people would remark on. Let us suppose I am visiting, for the first time perhaps, a town I do not know. Walking along the street I meet, by chance, an acquaintance of mine. We talk; in conversation he says that it is *his* first visit to this town, too. Our visits are quite unconnected. What a remarkable coincidence! A million-to-one chance!

But is it? To estimate the chance, one must be able to enumerate, at least roughly, the possible *nonoccurrences* of the event. It might have been a different town, a different day, a different time,

a different pair of acquaintances, etc. A little thought will show that these things are all incommensurable. They are not merely unknown quantities that might, given enough time and effort, be evaluated. That is, they cannot be counted *even in principle*, because they cannot be meaningfully defined. So the "chances against" cannot be guessed at; and that *some* coincidence will occur is inevitable, as Paulos well shows in his article. But this does not prevent us from noticing when we think a coincidence has occurred.

So wherein lies the nature of a coincidence? To me, it has no existence outside the recognition of it.

Studying coincidences, tells us more about the workings of the human mind than about the external physical world. Where there is no observer, there is no coincidence; if unreported and unremarked, it is as if it has not occurred. It is what we each recognize as a coincidence that is interesting and worthy of study, not the events themselves.

D. L. F. Sealy
London, U.K.

What a coincidence!

Yesterday evening, July 4, I was invited to attend the play *Harvey*, a whimsical "investigation" of reality.

Yesterday I also took to task the rearrangement of my voluminous address database, which I'd avoided for over a year as just too tedious.

Before bed I picked up my Summer SKEPTICAL INQUIRER and was delighted to discover the Paulos article "Coincidences."

Wouldn't you know! He uses the lap-top computer database concept to network coincidences analogous to the current use of business cards. One of the persistent idiosyncrasies in *Harvey* concerns the passing out of calling cards.

The article continues. "Or consider the famous birthday problem in probability theory . . . say July 4."

Coincidences indeed are fascinating. I realized long ago I was inadvertently accumulating them in my personal journals. I now consciously relish their appearances and seek suitable perspectives for them.

F. A. Bennett
West Tisbury, Mass.

Mathematical proof of the birthday "coincidence" is rather complex and difficult for the nonmathematician to follow. (I believe it is used in the training of actuaries, and that is indeed a proof of its difficulty to fathom!) There is, however, a simpler way of visualizing it, and I feel it is important to use such explanations whenever possible. This helps to explain things that otherwise can take on a mystical form.

Suppose you have 365 boxes (in place of days in the year) and 50 items (in place of people) that you want to pack in them. Well, there are very many more ways of packing your 50 items into the 365 boxes so that two (or more) share the same box than there are ways of arranging them so that there is only one in a box. The more items there are, the less the chances become of two *not* sharing a box.

Jon Miller
Helston
Cornwall, U.K.

In his article on coincidences, John Paulos points out the high likelihood that two people share the same birthdate and then mentions how much unlikelier it is that a person has some specific birthdate; he gives July 4 as an example. However, it just happens that my own birthdate is July 4; what an astounding coincidence! Paulos must have astounding psychic powers to have so accurately tailored his article to my own specific birthday.

Daniel Tobias
Shreveport, La.

Human auras

I read with interest Geoffrey Dean's column on the "Physiological Explanation of Human 'Auras' " (Summer 1991), and noticed that both he and D. F. Fraser-Harris (whose findings he quoted) seemed to have overlooked an important point of W. J. Kilner's results from the work carried out using his screens.

Kilner's work using glass screens in an attempt to view the aura did involve looking through a dark screen immediately prior to observing the "patient" through a pale screen (which is the point at which he observed the "aura") but the results of this method showed not only one outline of the patient (as would be the case with persistence of vision) but *three* outlines, each one having a different point of origin, and a different shape.

The first one, which Kilner named the "Etheric Double," was seen as a thin band less than an inch in width and outlining the entire shape of the body. The second one he named the "Inner Aura." He claimed that it began at the outer edge of the "Etheric Double" and was between two and four inches in width. The third he called the "Outer Aura," which, he said, began at the outer edge of the "Inner Aura" and varied considerably in size from person to person.

How, I wonder, would Geoffrey Dean begin to explain this as persistence of vision?

D. L. Hinbest
Sheffield
South Yorkshire, U.K.

Geoffrey Dean replies:

My brief article merely drew attention to a little-known study, nothing more. But after-images are not the only explanation for auras. Andrew Neher, in his Psychology of Transcendence *(Dover, New York, 1990:186-191), also mentions contrast effects, imagery effects, and physical causes. He notes that writers on auras tend to disagree on important points, such as size, shape, and color, which "does not bolster the notion that the auras thus perceived have an objective existence outside of the imagination of the viewer."*

If D. L. Hinbest disagrees, he can prove his point by passing Charles Tart's doorway test, where a person near the edge of a doorway should be detectable from the aura projecting into the doorway. Neher (pp. 187-198) reports proposing this test to two dozen aura readers; but only two agreed to take it, and both failed. Readers may have seen an aura reader failing this test on NBC's 1989 TV spectacular Paranormal Live, *despite a glittering $100,000 prize if successful.*

In summary, until aura readers are found who can pass this test, there would seem to be nothing in auras that is beyond ordinary explanation.

The Mims affair

I love your magazine, let there be no doubt about that. I carry each issue with me until I have carefully read each article. But Martin Gardner's defense of *Scientific American* in the Forrest Mims affair is dead wrong. Here is an issue where wise people are going to have to admit that *Scientific American* blew it and simply walked away.

Gardner presented Mims's qualifications well: "No one doubts Mims's ability to write about home experiments without smuggling in opinions on evolution and the Bible." Mims wrote three articles and they were acceptable. A *clearly* established fact is that Mims is capable of writing the column. So then why not hire him? Because of a "PR nightmare"? *Ridiculous!*

Re-read Gardner's article and substitute the word "black" or "female" for creationist. Would you *really* say that he should not be hired when the PR problem was the fact that he was black or female or Jewish? I don't care that Gardner insists that *Scientific American* does not discriminate on the basis of religious beliefs. Scientists form opin-

ions based on facts. The facts are that this magazine did not hire a qualified person because of his beliefs even though those beliefs did not affect his ability to do the job.

J. Ward Moody
Department of Physics
Brigham Young University
Provo, Utah

Whatever other faults Forrest Mims may have, and supporting creationism while trying to write for *Scientific American* is one of them, he is not a fundamentalist Baptist if he believes the days of Genesis are not 24-hour timespans or if he believes in the longterm creation of species. That makes him what fundamentalist Baptists would call heretic—or worse, a liberal. Biblical inerrancy is the test that separates the two Southern Baptist camps, and never the twain shall meet. In the first place, I don't think fundamentalist Southern Baptists would even dare *read Scientific American,* much less try to write for it.

Lou Hudson
Fort Worth, Tex.

The Forrest Mims incident illustrates a widespread misunderstanding of what constitutes the mainstream in religious affiliation in the United States. The so-called mainline Protestant churches (e.g., Presbyterian and Episcopalian) were not so named because they are mainstream—the term *mainline* refers to the wealthy and prestigious string of suburban communities along a commuter rail-line outside Philadelphia. The mainline churches therefore tend to represent the wealthy, privileged, and educated. The importance of Evangelical Protestantism is underestimated because of the proliferation of Protestant churches. Although the most populous single church in the United States is the Roman Catholic Church, most Americans are Protestant—and almost half of all Americans consider themselves Evangelicals. The confusion of "mainline" with "mainstream" arose among persons (including scholars and journalists) who lived in urban areas and wealthy suburbs and had therefore not observed a representative cross-section of the population. As Garry Wills pointed out in *Under God: Religion and Politics in America,* the presence of Evangelical Christianity (which is in a perpetual state of revival) has been a remarkably stable feature of American political life but is periodically "rediscovered" by journalists who think that it is a new and menacing movement. Thus, when the *Scientific American* staffers were told that Forrest Mims was an Evangelical or perhaps even a Fundamentalist, they may have considered him to be a representative of a dangerous fringe element rather than the mainstream. His frequent telephone calls to staffers probably did little to dispel this impression.

Perhaps the lack of awareness of the importance of Evangelical Protestantism in America is yet another example of innumeracy. Even educated persons seem unaware of the demographics of the American population. Evangelical Protestants are overlooked except when a creationism statute is passed by a state legislature or a television preacher is caught in some peccadillo or tries to run for the presidency. If advocates of evolutionary biology are ever to make headway in the mainstream of America, they must address the moral and theological concerns of Evangelical Christians. Otherwise, the biologists will just end up "preaching to the choir."

Laurie E. Thomas
Norfolk, Va.

I don't think *Scientific American* handled the Forrest Mims affair too well. Obviously it's Jonathan Piel's magazine and he has the right to do as he sees fit. Whether he was actually right, as opposed to *having* the right, is another thing. He should not have rejected Mims for the Amateur Scientist column unless

Mims intended it as a sounding board for creationism. And apparently he didn't. Lots of scientists have had quirks. A whole procession of physicists from the nineteenth century to today have advocated psi and spiritualism. While they believed claptrap about the supernatural, they made contributions to their fields. Crookes invented his crookes tube.

The greater danger I think comes from Piel's action. While good public relations may improve science's image, it damages its substance. Public relations is the basis of magic; people most readily accept irrational beliefs to be liked and respected. And while public relations may appear to have served science this time around, it at best served a parody of science, not in principle much above magic. Thus, while Piel fought the image of creationism, in reality he did a disservice to *Scientific American* readers. He believed Mims was otherwise the best candidate for Amateur Scientist columnist, didn't he? So he lost a good columnist over a mere quirk. I admit public relations has only caused minor damage to science here, but I'm not certain it's minor in other cases.

Richard A. Dengrove
Alexandria, Va.

'Metaphysics' honorable

As a philosopher it often saddens me to survey the books that are regularly allocated to the sections of bookshops devoted to philosophy. Since many New Age authors have appropriated (or misappropriated) the vocabulary of serious philosophical inquiry, this misallocation is quite intelligible.

The appropriation of the vocabulary of philosophy has another unfortunate consequence. It brings legitimate fields of inquiry into disrepute. It distresses me, for example, to see the word *metaphysical* repeatedly bracketed with "occult" and "New Age" by Lys Ann Shore and others (*SI*, Summer 1991).

Metaphysics examines the fundamental assumptions that we employ when we set about trying to make sense of the world; and as such it is a respectable field of philosophical inquiry. Metaphysical assumptions underlie every serious (and indeed spurious) theoretical speculation, although when there is agreement little purpose may be served by dwelling upon the metaphysical foundations of a particular field of inquiry. At times of disciplinary crisis, however, these basic assumptions characteristically become matters of great concern. . . .

Let it not be thought that I wish to defend all the garbage that goes under the heading "Metaphysics." I don't. But "Metaphysics" *is* a label for a robust area of inquiry that has persisted for more than two millennia and continues to fascinate those with a particular disposition for abstract reflection. It is an honorable word that I would be loath to give up lightly to the charlatans and shysters.

William Grey
Department of Philosophy
University of New England
Armidale, Australia

Nontraditional spirituality

I was extremely distressed to read Lys Ann Shore's article in the Summer 1991 SKEPTICAL INQUIRER. While I was not at all bothered to see her discrediting "New Age" books on channeling and crystals, I found her use of the term *questionable* (p. 342) to describe such diverse and non-New Age theories and philosophies as Jungian analysis (which is mentioned elsewhere in the same issue, on p. 420, as a legitimate area for scientific inquiry) and Eastern philosophy to be prejudicial and not at all consistent with the SKEPTICAL INQUIRER's stated objectives.

As a skeptic and a Wiccan, I resent her attack on nontraditional spirituality (such as that of "indigenous" cultures, which Shore includes in her category of questionable subjects), especially her use of the terms *questionable* and *so-called* in relation to Goddess religion. By using

such hostile language, Shore denies legitimacy to women's spirituality and Wicca. Wicca is a religion with at least one legally recognized, tax-exempt umbrella group—the Covenant of the Goddess—and its beliefs are held by its practitioners as seriously as the articles of Christianity, Islam, Judaism, and other major world religions are held by the followers of those faiths. . . .

Ginger Jaye Phillips
Webster, Tex.

Therapists not advisors

The SKEPTICAL INQUIRER provided a service in reviewing the book *Critical Thinking in Clinical Practice*, by Eileen Gambrill (Summer 1991). Perhaps reviewer Robert A. Baker had the mandate to stray from this specific book to a more general critique of psychotherapy with comment on "metapsychiatry," a reported merging of psychiatry with mysticism and the occult. I was glad that he brought this subject to the attention of your readers.

My main concern, however, is his comparison of the taped interchange between psychic and client and what Baker thinks goes on between a patient or client and a psychotherapist. I think it is misleading for him to suggest that patients or clients come to psychotherapists seeking "direction" from an "all-knowing, future-seeing guru who resolves problems, provides comfort, gives reassurance, points out the correct direction, and feels good about having helped one more poor unfortunate." Psychics may give advice and offer direction; but it is not considered consistent with good therapeutic practice, in most kinds of psychotherapy, to offer advice except under very unusual circumstances, for example, when a patient is determined to do something that will surely be socially destructive. Regardless of the shortcomings of many different types of psychotherapy, and the lack of scientific basis for their theoretical formulations, I think Baker's criticism of psychotherapy, by implication, in this part of the review, was unfair.

P. C. S. Hoaken, M.D.
Professor of Psychiatry
Queen's University
Kingston, Ontario, Canada

Condescension self-defeating

I was dismayed by the glib attitude displayed in Part 2 of Samual T. Gill's article "Carrying the War into the Never-Never Land of Psi." From title to conclusion the tone of the article was condescending, superior, and even contemptuous. . . .

I am no supporter of pseudoscience. I am a "true believer" in the same principle Gill claims guides his efforts: the need for independent investigation of reality. Like him, I believe we must learn to think for ourselves rather than blindly follow any piper—pied or otherwise. But condescending attitudes and the cavalier psi-party crashing he encourages are counterproductive to that aim. What "outstanding victory," what "triumph" can we imagine we have won if our humiliated victims close us out and turn an emotionally deafened ear to everything we represent? These tactics may offer some ego gratification—who can resist the heady charge of being able to say "Gotcha!"?—but I seriously doubt they will aid in the "reduction of . . . nonsense." They will certainly not convert "true believers" in pseudoscience into enlightened seekers of knowledge or truth.

Maya Kaathryn Bohnhoff
Grass Valley, Calif.

Style and money

Your praise of the *Toronto Globe and Mail's* Style Book (Summer 1991, p. 353) might have been tempered if you had a look at the newspaper itself. For example, the *Globe* is one of the few newspapers I know that used to have

a disclaimer ("for entertainment only") over its astrology column, but removed it a few months ago. Also, on page D8 of the June 15 edition, there are no less than four advertisements for astrologers.

You can draw what inferences you like from this (or none, if you wish). My inference is that when it comes to literary style, the *Globe* editors want their writers to get it right. When it comes to money, the *Globe* publishers want to get that too. Sorry to sound like a cynic.

Morton S. Rapp, M.D.
Willowdale
Ontario, Canada

Peril of omniscience concept

The letter from Mark Gass in your Summer 1991 issue is interesting in that Gass seems to suggest defending the "efficacy of prayer" in part by an appeal to the omniscience of God. Divine omniscience is a concept fraught with difficulty and philosophic peril; the problem of freeing it (no pun intended) from a commitment to bottom-line determinism has not, I think, been solved; and to this day theistic philosophers and philosophic theists torment themselves about it. Since a less than fully omniscient God could yet answer at least some of the prayers addressed to Her, whereas a fully omniscient God would be obliged to simply observe the necessary (because infallibly known to Her) answering or nonanswering of each of them, I recommend that Gass consider invoking less problematic suppositions. Mayhap some of them would be testable. Mayhap not.

Tom McLaughlin
Lubbock, Tex.

The letters column is a forum for views on matters raised in previous issues. Brief letters (less than 250 words) are welcome. We reserve the right to edit longer ones. They should be typed double-spaced. Due to the volume of letters, not all can be published. Address them to Letters to the Editor, SKEPTICAL INQUIRER, 3025 Palo Alto Dr. NE, Albuquerque, NM 87111.

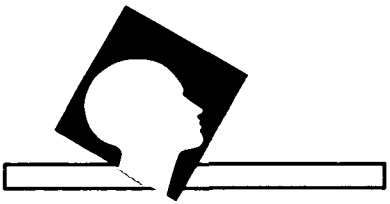
STATEMENT OF OWNERSHIP, MANAGEMENT, AND CIRCULATION
(Required by 39 U.S.C. 3685)

Date of filing: October 11, 1991. Title: The Skeptical Inquirer. Frequency of issue: Quarterly. Complete *mailing address of known office of publication:* 3965 Rensch Road, P.O. Box 703, Buffalo, NY 14226. Complete mailing address of the headquarters of general business offices of the publisher: 3965 Rensch Road, P.O. Box 703, Buffalo, NY 14226. Publisher: CSICOP, Inc. (Committee for the Scientific Investigation of Claims of the Paranormal), 3965 Rensch Road, P.O. Box 703, Buffalo, NY 14226. Editor: Kendrick Frazier, 3025 Palo Alto Dr., N.E., Albuquerque, NM 87111. Managing Editor: Doris Doyle, P.O. Box 703, Buffalo, NY 14226. Owner: CSICOP, Inc. (Committee for the Scientific Investigation of Claims of the Paranormal, Inc.), 3965 Rensch Road, P.O. Box 703, Buffalo, NY 14226. Known bondholders, mortgagees, and other security holders: None.

Aver. no. copies of each issue during preceding 12 months: A. Total no. copies printed (Net press run) 40,968. B. Paid and/or requested circulation (1) Sales through dealers and carriers, street vendors and counter sales 1,395; (2) Mail subscriptions 33,552. C. Total paid and/or requested circulation 34,947. D. Free distribution by mail, carrier, or other means, samples, complimentary, and other free copies 2,677. E. Total distribution (Sum of C and D) 37,624. F. Copies not distributed (1) Office use, left over, unaccounted, spoiled after printing 3,344; (2) Return from news agents 0. G. Total (Sum of E, F 1 and 2) 40,968.

Actual no. copies of single issue published nearest filing date: A. Total no. copies printed (Net press run) 41,410. B. Paid and/or requested circulation (1) Sales through dealers and carriers, street vendors and counter sales 1,441; (2) Mail subscriptions 32,650. C. Total paid and/or requested circulation 34,091. D. Free distribution by mail, carrier, or other means, samples, complimentary, and other free copies 2,680. E. Total distribution (Sum of C and D) 36,771. F. Copies not distributed (1) Office use, left over, unaccounted, spoiled after printing 4,639; (2) Return from news agents 0. G. Total (Sum of E, F 1 and 2) 41,410.

CSICOP News



Announcing the CSICOP Legal Defense Foundation

BARRY KARR
Executive Director, CSICOP

Ten years ago, while I was a student at the State University of New York at Buffalo, I was taking courses in Political Science with the idea of attending law school upon graduation. One of my housemates at the time was a law student. Watching him closely for a year helped me to realize that the law was not my calling after all.

The irony is that virtually every day since mid-1986 I have been involved in fighting lawsuits brought against CSICOP. We had a couple of months off in 1988, but not a day has passed since I became executive director of CSICOP in July 1989 that we weren't being sued by someone.

What have I learned in my real-world law school? First, that there is no such thing as justice unless you are rich. Second, that there is no such thing as First Amendment rights—unless you can pay for them. Third, that the American legal system is often unfair. Fourth, that I should have gone to law school.

I have seen and heard my share of strange things since I began working at CSICOP. But nothing amazes me more than watching The Law in action. Even if it is apparent that a case is meritless and will be dismissed at some point down the line, you still must fight it vigorously, at each step, to the bitter end. As a skeptic, I like to find normal explanations for unusual events. I would like someone to explain to me how such lawsuits can be allowed to proceed through the system.

Unlike the law in some other countries, there is no automatic mechanism in the United States that would make the person bringing the suit responsible, if he or she loses the case, for the costs incurred by the defendant. Thus, an innocent organization or person can be named in lawsuit after lawsuit. This technique is so popular in the United States that it has its own acronym—SLAPP (Strategic Lawsuits Against Public Participation).

The basic idea of a SLAPP is to force your opponent to spend a large amount of time and vast sums of money defending the suit. The longer a suit can be dragged out the better. This accomplishes two goals—to drain the defendant of time and money so he or she can't do anything but fight the suit, and to coerce the defendant into silence from fear of future suits.

Because suits of this nature could threaten the very existence of this organization, we have established the CSICOP Legal Defense Foundation. This fund will be used to pay costs

associated with existing lawsuits and act as a reserve in the event of future actions. We also hope to be able to assist other skeptics who are facing similar difficulties.

CSICOP will also maintain a list of lawyers who are sympathetic to the skeptics' cause and would be willing to act as resources should the need arise. Lawyers interested in defending the rights of skeptics are urged to write or call me at CSICOP's Buffalo address.

Contributions to the CSICOP Legal Defense Foundation are tax-deductible and should be sent to my attention at the CSICOP office in Buffalo.

THE CSICOP LEGAL DEFENSE FOUNDATION

YES, I want to help CSICOP meet the expenses associated with its current lawsuits and establish a fund to draw on in case of future suits.

□ I enclose my tax-deductible contribution in the amount of $ _____

Please charge this amount to my □ Visa □ MasterCard

#_____ Exp. _____

Name _____

Address _____

City _____ State _____ Zip _____

Phone _____

Mail to

CSICOP Legal Defense Foundation
Attention: Barry Karr
Box 703
Buffalo, NY 14226

Local, Regional, and National Organizations

The organizations listed below have aims similar to those of CSICOP and work in cooperation with CSICOP but are independent and autonomous. They are not affiliated with CSICOP, and representatives of these organizations cannot speak on behalf of CSICOP.

UNITED STATES

ALABAMA. Alabama Skeptics, Emory Kimbrough, 3550 Watermelon Road, Apt. 29A, Northport, AL 35476 (205-759-2624).

ARIZONA. Tucson Skeptical Society (TUSKS), James McGaha, Chairman, 2509 N. Campbell Ave., Suite #16, Tucson, AZ 85719. **Phoenix Skeptics,** Michael Stackpole, Chairman, P.O. Box 60333, Phoenix, AZ 85028.

CALIFORNIA. Bay Area Skeptics, Rick Moen, Secretary, 4030 Moraga, San Francisco, CA 94122-3928. **East Bay Skeptics Society,** Daniel Sabsay, President, P.O. Box 20989, Oakland, CA 94620 (415-420-0702). **Sacramento Skeptics Society,** Terry Sandbek, 3838 Watt Ave., Suite C303, Sacramento, CA 95821-2664 (916-488-3772).

COLORADO and WYOMING. Rocky Mountain Skeptics, Béla Scheiber, President, P.O. Box 7277, Boulder, CO 80306.

DISTRICT OF COLUMBIA, DELAWARE, MARYLAND, and VIRGINIA. National Capital Area Skeptics, c/o D. W. "Chip" Denman, 8006 Valley Street, Silver Spring, MD 20910.

FLORIDA. Tampa Bay Skeptics, Gary Posner, 6219 Palma Blvd., #210, St. Petersburg, FL 33715 (813-867-3533).

GEORGIA. Georgia Skeptics, Correspondence Secretary, P.O. Box 654, Norcross, GA 30091.

ILLINOIS. Midwest Committee for Rational Inquiry, Lawrence Kitsch, President, P.O. Box 2792, Des Plaines, IL 60017-2792.

INDIANA. Indiana Skeptics, Robert Craig, Chairperson, 5401 Hedgerow Drive, Indianapolis, IN 46226.

KENTUCKY. Kentucky Assn. of Science Educators and Skeptics (KASES), Chairman, Prof. Robert A. Baker, 3495 Castleton Way North, Lexington, KY 40502.

LOUISIANA. Baton Rouge Proponents of Rational Inquiry and Scientific Methods (BR-PRISM), Henry Murry, Chairman, P.O. Box 15594, Baton Rouge, LA 70895.

MASSACHUSETTS. Skeptical Inquirers of New England, Laurence Moss, Chairman, c/o Ho & Moss, Attorneys, 72 Kneeland St., Boston, MA 02111.

MICHIGAN. Great Lakes Skeptics, Carol Lynn, contact, 1264 Bedford Rd., Grosse Pointe Park, MI 84230-1116.

MINNESOTA. Minnesota Skeptics, Robert W. McCoy, 549 Turnpike Rd., Golden Valley, MN 55416. **St. Kloud ESP Teaching Investigation Committee** (SKEPTIC), Jerry Mertens, Coordinator, Psychology Dept., St. Cloud State Univ., St. Cloud, MN 56301.

MISSOURI. Kansas City Committee for Skeptical Inquiry, Verle Muhrer, Chairman, 2658 East 7th, Kansas City, MO 64124. **Gateway Skeptics,** Chairperson, Steve Best, 6943 Amherst Ave., University City, MO 63130.

NEW MEXICO. New Mexicans for Science & Reason, John Geohegan, Chairman, 450 Montclaire SE, Albuquerque, NM 87108; John Smallwood, 320 Artist Road, Santa Fe, NM 87501 (505-988-2800).

NEW YORK. Finger Lakes Association for Critical Thought, Ken McCarthy, 107 Williams St., Groton, NY 13073. **New York Area Skeptics** (NYASk), William Wade, contact person, 97 Fort Hill Road, Huntington, NY 11743-2205. **Western New York Skeptics,** Tim Madigan, Chairman, 3159 Bailey Ave., Buffalo, NY 14215.

NORTH CAROLINA. N.C. Skeptics, Michael J. Marshall, Pres., 3318 Colony Dr., Jamestown, NC 27282.

OHIO. South Shore Skeptics, Page Stephens, 6006 Fir Avenue, Cleveland OH 44102 (216-631-5987).

OHIO, INDIANA, KENTUCKY. Ohio Valley Skeptics, Contact Joseph F. Gastright, 111 Wallace Ave., Covington, KY 41014, (513) 369-4872 or (606) 581-7315.

PENNSYLVANIA. Paranormal Investigating Committee of Pittsburgh (PICP), Richard Busch, Chairman, 5841 Morrowfield Ave., #302, Pittsburgh, PA 15217 (412-521-2334). **Delaware Valley Skeptics,** Brian Siano, Secretary, Apt. 1-F, 4406 Walnut St., Philadelphia, PA 19104.

SOUTH CAROLINA. South Carolina Committee to Investigate Paranormal Claims, John Safko, 3010 Amherst Ave., Columbia, SC 29205.

TENNESSEE. Tennessee Valley Skeptics, Daniel O'Ryan, Secretary, P.O. Box 50291, Knoxville, TN 37950.

TEXAS. Austin Society to Oppose Pseudoscience (ASTOP), Lawrence Cranberg, President, P.O. Box 3446, Austin, TX 78764. **Houston Association for Scientific Thinking** (HAST), Darrell Kachilla, P.O. Box 541314, Houston, TX 77254. **North**

(continued on next page)

Texas Skeptics, John Blanton, President, P.O. Box 111794, Carrollton, TX 75011-1794. **West Texas Society to Advance Rational Thought,** Co-Chairmen: George Robertson, 6500 Eastridge Rd., #73, Odessa, TX 79762-5219 (915-367-3519); Don Naylor, 404 N. Washington, Odessa, TX 79761.

WASHINGTON. The Society for Sensible Explanations, Philip Haldeman/Michael Dennett, T.L.P.O. Box 8234, Kirkland, WA 98034.

WISCONSIN. Wisconsin Committee for Rational Inquiry, Mary Beth Emmericks, Convenor, 8465 N. 51st St., Brown Deer, WI 53223.

ARGENTINA. CAIRP, Director, Ladislao Enrique Maiquez, Jose Marti, 35 dep C, 1406 Buenos Aires.

AUSTRALIA. National: **Australian Skeptics,** P.O. Box E324 St. James, NSW 2000. Regional: **Australian Capital Territory,** P.O. Box 555, Civic Square, 2608. **Newcastle Skeptics,** Chairperson, Colin Keay, Physics Dept., Newcastle University, NSW 2308. **Queensland,** P.O. Box 2180, Brisbane, 4001. **South Australia,** P.O. Box 91, Magill, 5072. **Victoria,** P.O. Box 1555P, Melbourne, 3001. **Western Australia,** 25 Headingly Road, Kalamunda 6076.

BELGIUM. Committee Para, J. Dommanget, Chairman, Observatoire Royal de Belgique, Avenue Circulaire 3, B-1180 Brussels. **SKEPP,** W. Betz, Secretary, Laarbeeklaan 103, B1090 Brussels (FAX: 32-2-4774301).

CANADA. National: Chairman, James E. Alcock, Glendon College, York Univ., 2275 Bayview Avenue, Toronto, Ontario. Regional: **Alberta Skeptics,** Elizabeth Anderson, P.O. Box 5571, Station A, Calgary, Alberta T2H 1X9. **British Columbia Skeptics,** Barry Beyerstein, Chairman, Box 86103, Main PO, North Vancouver, BC, V7L 4J5. **Manitoba Skeptics,** Bill Henry, President, Box 92, St. Vital, Winnipeg, Man. R2M 4A5. **Ontario Skeptics,** Henry Gordon, Chairman, P.O. Box 505, Station Z, Toronto, Ontario M5N 2Z6. **Quebec Skeptics:** Jean Ouellette, C.P. 282, Repentigny, Quebec J6A 7C6 (514-498-7977).

ESTONIA. Contact Indrek Rohtmets, Horisont Magazine, 200102 Tallinn, Navva vd. 5.

FINLAND. Skepsis, Lauri Gröhn, Secretary, Ojahaanpolku 8 B17, SF-01600 Vantaa.

FRANCE. Comité Français pour l'Etude des Phénomènes Paranormaux, Claude Benski, Secretary-General, Merlin Gerin, RGE/A2 38050 Grenoble Cedex.

GERMANY. East German Skeptics, A. Gertler, Chairman, Inst. for Forensic Medicine, Humboldt Univ., Berlin 1040. **Society for the Scientific Investigation of Para-Science** (GWUP), Amardeo Sarma, Convenor, Postfach 1222, D-6101 Rossdorf.

INDIA. B. Premanand, Chairman, 10, Chettipalayam Rd., Podanur 641-023 Coimbatore Tamil nadu. For other Indian organizations contact B. Premanand for details.

IRELAND. Irish Skeptics, Peter O'Hara, Contact, Dept. of Psychiatry, Airedale General Hospital, Steeton, Keighly, West Yorkshire, UK BD20 6TD.

ITALY. Comitato Italiano per il Controllo delle Affermazioni sul Paranormale, Lorenzo Montali, Secretary, Via Ozanam 3, 20129 Milano, Italy.

JAPAN. Japan Skeptics, Jun Jugaku, Chairperson, 1-31-8-527 Takadanobaba, Shinjuku-Ku, Tokyo 169.

MALTA. Contact: Vanni Pule', "Kabbalah," 48 Sirti St., The Village, St. Julian's.

MEXICO. Mexican Association for Skeptical Research (SOMIE), Mario Mendez-Acosta, Chairman, Apartado Postal 19-546, Mexico 03900, D.F.

NETHERLANDS. Stichting Skepsis, Rob Nanninga, Secretary, Westerkade 20, 9718 AS Groningen.

NEW ZEALAND. New Zealand Skeptics, Warwick Don, Dept. of Zoology, Univ. of Otago, Dunedin, NZ.

NORWAY. NIVFO, K. Stenodegard, P.O. Box 2119, N-7001, Trondheim. **Skepsis,** Terje Emberland, Contact, P. B. 2943 Toyen 0608, Oslo 6.

SOUTH AFRICA. Assn. for the Rational Investigation of the Paranormal (ARIP), Marian Laserson, Secretary, 4 Wales St., Sandringham 2192.

SPAIN. Alternativa Racional a las Pseudosciencias (ARP), Luis Miguel Ortega, Executive Director, P.O. Box 6.112, Bilbao.

SWEDEN. Vetenskap & Folkbildning (Science and People's Education), Sven Ove Hansson, Secretary, Box 185, 101 22 Stockholm.

SWITZERLAND. Conradin M. Beeli, Convenor, Rietgrabenstr. 46 CH-8152 Opfikon.

UNITED KINGDOM. SKEPTICAL INQUIRER Representative, Michael J. Hutchinson, 10 Crescent View, Loughton, Essex IG10 4PZ. **The Skeptic** magazine, Editors, Toby Howard and Steve Donnelly, P.O. Box 475, Manchester M60 2TH. **London Student Skeptics,** Michael Howgate, President, 71 Hoppers Rd., Winchmore Hill, London N21 3LP. **Manchester Skeptics,** David Love, P.O. Box 475, Manchester M60 2TH. **Wessex Skeptics,** Robin Allen, Dept. of Physics, Southampton University, Highfield, Southampton S09 5NH.

U.S.S.R. Science & Religion, Contact Edward Gevorkian, Ulyanovskaya 43, Kor 4, 109004, Moscow. **Perspectiva,** Oleg G. Bakhtiarov, Director, 36 Lenin Blvd., Kiev 252001.

The Committee for the Scientific Investigation of Claims of the Paranormal

Paul Kurtz, Chairman

Scientific and Technical Consultants

George Agogino, Dept. of Anthropology, Eastern New Mexico University. **William Sims Bainbridge,** professor of sociology, Illinois State University. **Gary Bauslaugh,** dean of technical and academic education and professor of chemistry, Malaspina College, Nanaimo, British Columbia, Canada. **Richard E. Berendzen,** astronomer, Washington, D.C. **Barry L. Beyerstein,** professor of psychology, Simon Fraser University, Burnaby, British Columbia, Canada. **Martin Bridgstock,** lecturer, School of Science, Griffith Observatory, Brisbane, Australia. **Vern Bullough,** dean of natural and social sciences, SUNY College at Buffalo. **Richard Busch,** magician, Pittsburgh, Pa. **Shawn Carlson,** physicist, Berkeley, Calif. **Charles J. Cazeau,** geologist, Tempe, Ariz. **Ronald J. Crowley,** professor of physics, California State University, Fullerton. **Roger B. Culver,** professor of astronomy, Colorado State Univ. **J. Dath,** professor of engineering, Ecole Royale *Militaire, Brussels, Belgium.* **Felix Ares De Blas,** *professor of computer science, University of Basque,* San Sebastian, Spain. **Sid Deutsch,** Visiting Professor of electrical engineering, University of South Florida, Tampa. **J. Dommanget,** astronomer, Royale Observatory, Brussels, Belgium. **Natham J. Duker,** assistant professor of pathology, Temple University. **Barbara Eisenstadt,** educator, Scotia, N.Y. **Frederic A. Friedel,** philosopher, Hamburg, West Germany. **Robert E. Funk,** anthropologist, New York State Museum & Science Service. **Sylvio Garattini,** director, Mario Negri Pharmacology Institute, Milan, Italy. **Laurie Godfrey,** anthropologist, University of Massachusetts. **Gerald Goldin,** mathematician, Rutgers University, New Jersey. **Donald Goldsmith,** astronomer; president, Interstellar Media. **Clyde F. Herreid,** professor of biology, SUNY, Buffalo. **Philip A. Ianna,** assoc. professor of astronomy, Univ. of Virginia. **William Jarvis,** chairman, Public Health Service, Loma Linda University, California. **I. W. Kelly,** professor of psychology, University of Saskatchewan. **Richard H. Lange,** chief of nuclear medicine, Ellis Hospital, Schenectady, New York. **Gerald A. Larue,** professor of biblical history and archaeology, University of So. California. **Bernard J. Leikind,** staff scientist, GA Technologies Inc., San Diego. **William M. London,** assistant professor of health education, Kent State University. **Jeff Mayhew,** computer consultant, Aloha, Oregon. **Thomas R. McDonough,** lecturer in engineering, Caltech, and SETI Coordinator of the Planetary Society. **James E. McGaha,** Major, USAF; pilot. **Joel A. Moskowitz,** director of medical psychiatry, Calabasas Mental Health Services, Los Angeles. **Robert B. Painter,** professor of microbiology, School of Medicine, University of California. **John W. Patterson,** professor of materials science and engineering, Iowa State University. **Steven Pinker,** assistant professor of psychology, MIT. **James Pomerantz,** professor of psychology, Rice University; **Daisie Radner,** professor of philosophy, SUNY, Buffalo. **Michael Radner,** professor of philosophy, McMaster University, Hamilton, Ontario, Canada. **Robert H. Romer,** professor of physics, Amherst College. **Milton A. Rothman,** physicist, Philadelphia, Pa. **Karl Sabbagh,** journalist, Richmond, Surrey, England. **Robert J. Samp,** assistant professor of education and medicine, University of Wisconsin-Madison. **Steven D. Schafersman,** geologist, Houston. **Chris Scott,** statistician, London, England. **Stuart D. Scott, Jr.,** associate professor of anthropology, SUNY, Buffalo. **Erwin M. Segal,** professor of psychology, SUNY, Buffalo. **Elie A. Shneour,** biochemist; director, Biosystems Research Institute, La Jolla, California. **Steven N. Shore,** astronomer, NASA Goddard Space Flight Center, Md. **Barry Singer,** psychologist, Eugene, Oregon. **Mark Slovak,** astronomer, University of Wisconsin-Madison. **Douglas Stalker,** associate professor of philosophy, University of Delaware. **Gordon Stein,** physiologist, author; editor of the *American Rationalist.* **Waclaw Szybalski,** professor, McArdle Laboratory, University of Wisconsin-Madison. **Ernest H. Taves,** psychoanalyst, Cambridge, Massachusetts. **Sarah G. Thomason,** professor of linguistics, University of Pittsburgh, editor of *Language.*

Subcommittees

Astrology Subcommittee: Chairman, I. W. Kelly, Dept. of Educational Psychology, University of Saskatchewan, Saskatoon, Saskatchewan S7N 0W0, Canada.

College and University Lecture Series Subcommittee: Chairman, Paul Kurtz; Lecture Coordinator, Ranjit Sandhu, CSICOP, Box 703, Buffalo, NY 14226-0703.

Education Subcommittee: Chairman, Steven Hoffmaster, Physics Dept., Gonzaga Univ., Spokane, WA 99258-0001; Secretary, Wayne Rowe, Education Dept., Univ. of Oklahoma, 820 Van Vleet Oval, Norman, OK 73019.

Electronics Communications Subcommittee: Chairman, Page Stevens, 6006 Fir Ave., Cleveland, OH 44102.

Paranormal Health Claims Subcommittee: Co-chairmen, William Jarvis, Professor of Health Education, Dept. of Preventive Medicine, Loma Linda University, Loma Linda, CA 93350, and Stephen Barrett, M.D., P.O. Box 1747, Allentown, PA 18105.

Parapsychology Subcommittee: Chairman, Ray Hyman, Psychology Dept., Univ. of Oregon, Eugene, OR 97402.

UFO Subcommittee: Chairman, Philip J. Klass, 404 "N" Street S.W., Washington, D.C. 20024.

The Committee for the Scientific Investigation of Claims of the Paranormal

The Committee for the Scientific Investigation of Claims of the Paranormal attempts to encourage the critical investigation of paranormal and fringe-science claims from a responsible, scientific point of view and to disseminate factual information about the results of such inquiries to the scientific community and the public. It also encourages critical thinking, an appreciation of science, and the use of reason in examining important issues. To carry out these objectives the Committee:

- Maintains a network of people interested in critically examining paranormal, fringe-science, and other claims, and in contributing to consumer education.
- Prepares bibliographies of published materials that carefully examine such claims.
- Encourages and commissions research by objective and impartial inquiry in areas where it is needed.
- Convenes conferences and meetings.
- Publishes articles, monographs, and books that examine claims of the paranormal.
- Does not reject claims on a priori grounds, antecedent to inquiry, but rather examines them objectively and carefully.

The Committee is a nonprofit scientific and educational organization
The SKEPTICAL INQUIRER is its official journal